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a	RSB	А а	p	RSB	П п
b	RSB	Б б	r	RSB	Р р
ch	RSB	Ч ч	s	RSB	С с
d	RSB	Д д	sh	RSB	Ш ш
e	RSB	Е е	shch	R	Щ щ
ë	R	Ё ё	sht	B	Щ щ
é	R	Э э	t	RSB	Т т
ê	R B	Ё ё	t'	R B	ТЬ ТЬ
f	RSB	Ф ф	t'	S	Ъ ъ
g	RSB	Г г	th	R	Ө ө
i	RSB	И и	ts	RSB	Ц ц
ī	R	І і	t-s	RSB	ТС ТС
ï	R B	Й й	u	RSB	У у
j	S	Ї ї	ū	B	Ъ ъ
j'	S	Ї ъ	ū	B	Ж ж
k	RSB	К к	v	RSB	В в
kh	RSB	Х х	y	S	Ј ј
l	RSB	Л л	ȳ	R	Ы ы
l'	R B	ЛЬ ЛЬ	ȳ	R	Ѹ Ѹ
l'	S	Љ љ	ya	R B	Ј я
m	RSB	М м	yu	R B	Ю ю
n	RSB	Н н	z	RSB	З з
n'	R B	НЬ НЬ	zh	RSB	Ж ж
n'	S	Њ њ	'	R	Ъ ъ
o	RSB	О о	'	R B	Ь ь

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Shch and sht invariably represent the letter Ш, in Russian and Bulgarian respectively, since the pairs of letters (ЩЧ in Russian and ШТ in Bulgarian) seem never to occur consecutively in the respective languages.

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The list contains the names of all journals referred to, without discriminating between those which are regularly scanned by "Science Abstracts", and those of which only occasional copies are scanned, or from which reprints of single articles have been received. A fresh list is now in preparation, annotated to indicate which journals are regularly scanned, and this will be published in the next volume. In addition, a list of the journals whose contents are abstracted completely is in preparation.

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ACEC Rev. (Belgium)  
ACEC Revue — Ateliers de Constructions Electriques de Charleroi, Avenue Emile Rousseau, Marcinelle-Charleroi. [French-language edition].

AEG Mitt. (Germany)  
AEG Mitteilungen — Allgemeine Elektrizitäts-Gesellschaft, Hohenzollerndamm 150, Berlin-Grünwald. [A translation of selected articles is published as: AEG Progress].

AEG Progress (Germany)  
AEG Progress — Allgemeine Elektrizitäts-Gesellschaft, Hohenzollerndamm 150, Berlin-Grünwald. [English translation of selected articles from: AEG Mitteilungen].

AEI Engng (GB)  
AEI Engineering — Associated Electrical Industries, 33 Grosvenor Place, London, SW1.

AEI Res. Lab. Repr. (GB)  
AEI Research Laboratory Reprint — Associated Electrical Industries, Rugby.

AEI tech. Monogr. (GB)  
AEI Technical Monograph — Associated Electrical Industries, Rugby.

ASTM Bull. (USA)  
American Society for Testing and Materials. Bulletin — Title changed to: Materials Research and Standards [Materials Res. Stand.].

ATE J. (GB)  
ATE Journal — Automatic Telephone and Electric Co., Strowger Works, Liverpool 7.

AWA tech. Rev. (Australia)  
AWA Technical Review — Amalgamated Wireless Australasia, 554 Parramatta Road, Ashfield, New South Wales.

Abhandl. Braunsch. Wiss. Gesell. (Germany)  
Abhandlungen der Braunschweigischen Wissenschaftlichen Gesellschaft — Publisher: Friedr. Vieweg, Braunschweig.

Abhandl. Deutschen Akad. Wiss. Berlin, Kl. Math. Phys. Tech. (Germany)  
Abhandlungen der Deutschen Akademie der Wissenschaften, Klasse ffr Mathematik, Physik und Technik — Publisher: Akademie-Verlag, Mohrenstrasse 39, Berlin W8.

Acero y Energia (Spain)  
Acero y Energia — C. Berlin 46-50, Barcelona 15.

Acta chem. Scandinavica  
Acta Chemica Scandinavica — Ejnar Munksgaard, Nørregade 6, København, Denmark.

Acta cryst. (Internat.)  
Acta Crystallographica — International Union of Crystallography. Publisher: Ejnar Munksgaard, Nørregade 6, København, Denmark. Subscription address: Polycrystal Book Service, GPO Box 620, Brooklyn 1, NY.

Acta electronica (France)  
Acta Electronica — 23 Rue du Retrait, Paris 20.

Acta metallurgica (USA)  
Acta Metallurgica — Box 1088, Schenectady, NY. Publisher: Pergamon Press (Acta Metallurgica), 122 East 55th Street, New York 22, NY.

Acta phys. Austriaca  
Acta Physica Austriaca — Springer-Verlag, Mölkerbastel 5, Wien I.

Acta phys. chem. Szeged (Hungary)  
Acta Physica et Chemica (Acta Universitatis Szegediensis) — Szegedi Tudományegyetem Természettudományi Kara, Aradi Vértanúk tere 1, Szeged.

Acta phys. Hungar.  
Acta Physica Hungarica — Magyar Tudományos Akadémia, Alkotmány utca 21, Budapest 5. Subscription address: "Kultura" Foreign Trade Company for Books and Newspapers, Fő utca 32, Budapest I.

Acta phys. Polon. (Poland)  
Acta Physica Polonica — Polska Akademia Nauk. Subscription address: CKPW "Ruch", ul. Srebrna 12, Warszawa. Editorial address: ul. Golebia 13, Kraków.



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## Acta polytech. Scandinavica

Acta Polytechnica Scandinavica. Subseries: Chemistry including Metallurgy Series, Ch; Civil Engineering and Building Construction Series, Ci; Electrical Engineering Series, El; Mathematics and Computing Machinery Series, Ma; Mechanical Engineering Series, Me; Physics including Nucleonic Series, Ph — Scandinavian Council for Applied Research. Publication address: PO Box 5073, Stockholm 5, Sweden.

## Acta tech. (Czechoslovakia)

Acta technica — Československa Akademie Věd. Publication address: Jindřišská 14, Praha I.

## Acta tech. Hungar.

Acta Technica Academiae Scientiarum Hungaricae — Magyar Tudományos Akadémia, Alkotmány utca 21, Budapest 5. Subscription address: "Kultura" Foreign Trade Company for Books and Newspapers, Fő utca 32, Budapest 1.

## Acustica (Internat.)

Acustica — S.Hirzel Verlag, Stuttgart, Germany.

## Advances Nuclear Sci. Technol. (USA)

Advances in Nuclear Science and Technology — Academic Press, 111 Fifth Avenue, New York 3, NY.

## Advances in Phys. (GB)

Advances in Physics. (Quarterly Supplement of the Philosophical Magazine) — Taylor and Francis, Red Lion Court, Fleet Street, London, EC4.

## Aeronaut. Res. Coun. Curr. Pap. (GB)

Aeronautical Research Council Current Papers — HM Stationery Office, Kingsway, London, WC2.

## Aeronaut. Res. Coun. Rep. Mem. (GB)

Aeronautical Research Council Reports and Memoranda — HM Stationery Office, Kingsway, London, WC2.

## Aerospace Engng (USA)

Aerospace Engineering — Institute of the Aerospace Sciences, 2 East 64th Street, New York 21, NY.

## Akad. Wiss Lit. Mainz, Abhandl. (Germany)

Akademie der Wissenschaft und der Literatur in Mainz, Abhandlungen der mathematisch-naturwissenschaftlichen Klasse — Postfach 275, Mainz.

## Akust. Beih.

Akustische Beihefte — Issued under the auspices of the international journal Acustica. The pagination is continuous with that of Acustica.

## Akust. Zh. (USSR)

Akusticheski Zhurnal — Akademiya Nauk SSSR, Lenin Prospekt, Moscow. [A translation is published as: Soviet Physics—Acoustics].

## Allis-Chalmers elect. Rev. (USA)

Allis-Chalmers Electrical Review — Allis-Chalmers, Milwaukee 1, Wisconsin.

## Alta Frequenza (Italy)

Alta Frequenza — Associazione Elettrotecnica Italiana, Via San Paolo 10, Milano. [An English translation is published four times a year. The pagination is continuous with the Italian edition, but it has also a separate pagination of its own].

## Amer. J. Phys.

American Journal of Physics — American Institute of Physics, 335 East 45th Street, New York 17, NY.

## An. Acad. Brasil. Cienc.

Anais da Academia Brasileira de Ciências — Caixa Postal 229, Rio de Janeiro.

## An. Mecan. Elect. (Spain)

Anales de Mecanica y Electricidad — Reina 31, Madrid.

## An. Real Soc. Espan. Fis. Quim. (Spain)

Anales de la Real Sociedad Española de Física y Química. Serie A (Física) — Ciudad Universitaria, Madrid.

## An. Stiint. Univ. "Al.I.Cuza" Iasi (Ser. noua) I (Rumania)

Analele Științifice ale Universității "Al.I.Cuza" din Iasi (Serie Nouă). Secțiunea I (Matematică, Fizică, Chimie) — Iasi.

## Analyst (GB)

Analyst — [Abstracted by Copper Abstracts].

## Analyt. Chem. (USA)

Analytical Chemistry — American Chemical Society, 1155 Sixteenth Street NW, Washington 6, DC.

## Ann. Acad. Sci. Fennicae (Finland)

Annales Academiae Scientiarum Fennicae. Series AI (Mathematica); Series AII (Chemica); Series AIII (Geologica-Geographica); Series AVI (Physica) — Snellmaninkatu 9-11, Helsinki.

## Ann. Acfas (Canada)

Annales de l'Acfas — Association Canadienne-Française pour l'Avancement des Sciences, Université de Montréal, 2900 Boulevard du Mont Royal, Montreal 3.

## Ann. Assoc. Internat. Calcul Analogique (Belgium)

Annales de l'Association Internationale pour le Calcul Analogique — Publisher: Presses Académiques Européennes 98 Chaussée de Charle roi, Bruxelles 6.

## Ann. Astrophys. (France)

Annales d'Astrophysique — Service des Publications du CNRS, 13 Quai Anatole-France, Paris 7.

## Ann. Fac. Sci. Univ. Toulouse (France)

Annales de la Faculté des Sciences de l'Université de Toulouse — Published by: Gauthier-Villars, 55 Quai des Grands Augustins, Paris 6.

## Ann. Franc. Chronom.

Annales Françaises de Chronometrie — Service des Publications du CNRS, 15 Quai Anatole-France, Paris 7.

## Ann. Geofis. (Italy)

Annali di Geofisica — Istituto Nazionale di Geofisica, Città Universitaria, Roma.

## Ann. Geophys. (France)

Annales de Géophysique — Service des Publications du CNRS, 13 Quai Anatole-France, Paris 7.

## Ann. Inst. Poincaré (France)

Annales de l'Institut Henri Poincaré — 11 Rue Pierre-Curie, Paris 5.

## Ann. Mat., pura appl. (Italy)

Annali di Matematica, pura ed applicata — N.Zanichelli, 34 Via Imerio, Bologna.

## Ann. Phys. (Germany)

Annalen der Physik — J.A.Barth, Salomonstrasse 18B, Leipzig, C1.

## Ann. Phys. (USA)

Annals of Physics — Academic Press, 111 Fifth Avenue, New York 3, NY.

## Ann. Phys. (France)

Annales de Physique — Masson, 120 Boulevard Saint-Germain, Paris 6.

## Ann. Radioelect. (France)

Annales de Radioélectricité — Compagnie Générale de TSF, Centre de Documentation de la CSF, 101 Boulevard Murat, Paris 16.

## Ann. sci. Ecole Normale Super. (France)

Annales Scientifiques de l'Ecole Normale Supérieure — Publisher: Gauthier-Villars, 55 Quai des Grands-Augustins, Paris 6.

## Ann. Soc. Sci. Bruxelles (Belgium)

Annales de la Société Scientifique de Bruxelles, Série I, Sciences Mathématiques, Astronomiques et Physiques — 11 Rue des Récollets, Louvain.

## Ann. Telecomm. (France)

Annales des Telecommunications — Centre National d'Etudes des Télécommunications. Subscription address: Société de la Revue d'Optique, 3-5 Boulevard Pasteur, Paris 15.

## Ann. Tokyo Astron. Obs. (Japan)

Annals of the Tokyo Astronomical Observatory — University of Tokyo, Mitaka, Tokyo.

## Ann. Univ. Turku (Finland)

Annales Universitatis Turkuensis. Ser. AI (Astronomica-Chemica-Physica-Mathematica) — Turun Yliopiston Turku.

## Annu. Fac. Phil. Univ. Skopje Sect. Sci. nat. (Yugoslavia)

Annuaire de la Faculté de Philosophie de l'Université de Skopje. Section des Sciences Naturelles — Title changed to: Annuaire de la Faculté des Sciences de l'Université de Skopje [Annu. Fac. Sci. Univ. Skopje].

## Annu. Fac. Sci. Univ. Skopje (Yugoslavia)

Annuaire de la Faculté des Sciences de l'Université de Skopje (Formerly: Annuaire de la Faculté de Philosophie de l'Université de Skopje. Section des Sciences Naturelles) — Faculté des Sciences, Boite Postale 55, Skopje (Macedonia).



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- Annu. Proc. Assoc. Socs S.Africa**  
Annual Proceedings of the Associated Scientific and Technical Societies of South Africa — Kelvin House, Marshall and Holland Streets, PO Box 5907, Johannesburg.
- Annu. Rep. Sci. Works Fac. Sci. Osaka Univ. (Japan)**  
Annual Report of Scientific Works from the Faculty of Science, Osaka University — Nakanoshima, Osaka.
- Appl. Math. Mech. (USA)**  
Applied Mathematics and Mechanics — Published for the American Society of Mechanical Engineers by the Pergamon Institute. Distributors: Pergamon Press, 122 East 55th Street, New York 22, NY; and Headington Hill Hall, Oxford. [A translation of: Prikladnaya Matematika i Mekhanika].
- Appl. Math. Ser. Nat. Bur. Stand. (USA)**  
Applied Mathematics Series, National Bureau of Standards — US Government Printing Office, Washington 25, DC.
- Appl. Optics (USA)**  
Applied Optics — Optical Society of America (in cooperation with the American Institute of Physics), 1155 Sixteenth Street, NW, Washington 6, DC.
- Appl. Phys. Letters (USA)**  
Applied Physics Letters — American Institute of Physics, 335 East 45th Street, New York 17, NY.
- Appl. Phys. Quart. (India)**  
Applied Physics Quarterly (Formerly: Journal of Association of Applied Physicists) — Subscription address: Technical Journals of India Private Ltd., 24 Brabourne Road, Calcutta-1.
- Appl. sci. Res. (Netherlands)**  
Applied Scientific Research. Section A (Mechanics, Heat, Chemical Engineering, Mathematical Methods); Section B (Electrophysics, Acoustics, Optics, Mathematical Methods) — Martinus Nijhoff, Den Haag.
- Appl. Spectrosc. (USA)**  
Applied Spectroscopy — Society for Applied Spectroscopy. Subscription address: Boston College, Chestnut Hill 67, Massachusetts.
- Appl. and Industr.**  
Applications and Industry — Part II of the Transactions of the American Institute of Electrical Engineers [Trans Amer. Inst. Elect. Engrs].
- Arbok Univ. Bergen mat.-nat. Ser. (Norway)**  
Årbok for Universitetet i Bergen Matematisk-naturvitenskapelig Serie — University of Bergen, Bergen. Distribution address: Karl Johansgt. 47, Oslo.
- Arch. Automat. Telemach. (Poland)**  
Archiwum Automatyki i Telemachiki — Polska Akademia Nauk, Zakład Automatyki. Subscription address: CKPW "Ruch", ul. Srebrna 12, Warszawa.
- Arch. elekt. Übertragung (Germany)**  
Archiv der elektrischen Übertragung — S.Hirzel Verlag, Stuttgart.
- Arch. Elektrotech. (Germany)**  
Archiv für Elektrotechnik — Springer-Verlag, Heidelberger Platz 3, 1 Berlin-Wilmersdorf (West Berlin); Neuenheimer Landstrasse 28-30, 69 Heidelberg.
- Arch. Elektrotech. (Poland)**  
Archiwum Elektrotechniki — Polska Akademia Nauk. Instytut Podstawowych Problemow Techniki. Subscription address: Export and Import Enterprise "Ruch", Wilcza 46, Warszawa.
- Arch. Sci. (Switzerland)**  
Archives des Sciences — Société de Physique et d'Histoire Naturelle de Genève. Subscription address: Librairie Payot, 40 Rue du Marché, Genève.
- Arch. tech. Messen (Germany)**  
Archiv für technisches Messen und industrielle Messtechnik — R.Oldenbourg, Rosenheimer Str. 145, München 8.
- Ark. Astron. (Sweden)**  
Arkiv för Astronomi — Kungliga Svenska Vetenskapsakademien, Stockholm 50. Subscription address: Almqvist & Wiksell, Gamla Brogatan 26, Stockholm.
- Ark. Fys. (Sweden)**  
Arkiv för Fysik — Kungliga Svenska Vetenskapsakademien, Stockholm 50. Subscription address: Almqvist & Wiksell, Gamla Brogatan 26, Stockholm.
- Ark. Geofys. (Sweden)**  
Arkiv för Geofysik — Kungliga Svenska Vetenskapsakademien, Stockholm 50. Subscription address: Almqvist & Wiksell, Gamla Brogatan 26, Stockholm.
- Ark. Kemi (Sweden)**  
Arkiv för Kemi — Kungliga Svenska Vetenskapsakademien, Stockholm 50. Subscription address: Almqvist & Wiksell, Gamla Brogatan 26, Stockholm.
- Ark. Mat. (Sweden)**  
Arkiv för Matematik — Kungliga Svenska Vetenskapsakademien, Stockholm 50. Subscription address: Almqvist & Wiksell, Gamla Brogatan 26, Stockholm.
- Ark. Mineral. (Sweden)**  
Arkiv för Mineralogi och Geologi — Kungliga Svenska Vetenskapsakademien, Stockholm 50. Subscription address: Almqvist & Wiksell, Gamla Brogatan 26, Stockholm.
- Asea J. (Sweden)**  
Asea Journal — Allmanna Svenska Elektriska AB, Västerås; Fuller Electric Ltd., Fulbourne Road, London, E17.
- Asea Res. (Sweden)**  
Asea Research — Allmanna Svenska Elektriska AB, Västerås.
- Astron. J. (USA)**  
Astronomical Journal — Published for the American Astronomical Society by the American Institute of Physics, 335 East 45th Street, New York 17, NY.
- Astron. Nachr. (Germany)**  
Astronomische Nachrichten — [Abstracted by Mathematical Reviews].
- Astron. Zh. (USSR)**  
Astronomicheskii Zhurnal — Agent: Mezhdunarodnaya Kniga, Moscow. [A translation is published as: Soviet Astronomy-AJ].
- Astrophys. J. (USA)**  
Astrophysical Journal — University of Chicago Press, 5750 Ellis Avenue, Chicago 37, Illinois.
- Astrophys. Norveg. (Norway)**  
Astrophysica Norvegica — Institute of Theoretical Astrophysics, University of Oslo, Blindern, per Oslo. Subscription address: H.Aschehoug (W.Nygaard), Oslo.
- Atom u. Strom (Germany)**  
Atom und Strom — Vereinigung Deutscher Elektrizitätswerke. Verlags-u. Wirtschaftsgesellschaft der Elektrizitätswerke, Bockenheimer Landstrasse 109, Frankfurt am Main.
- Atomkernenergie (Germany)**  
Atomkernenergie — Verlag Karl Thieme, Pilgersheimerstrasse 38, München 9.
- Atomkraftwerk (Austria)**  
Das Atomkraftwerk — Supplement to: Österreichische Zeitschrift für Elektrizitätswirtschaft [Osterr. Z. ElektWirtsch.].
- Atomnaya Energiya (USSR)**  
Atomnaya Energiya — Akademiya Nauk SSSR, Lenin Prospekt, Moscow. [English translations of selected papers are published in Journal of Nuclear Energy, Parts A, B and C].
- Atti Accad. Sci. Torino (Italy)**  
Atti della Accademia delle Scienze di Torino. I. Classe di Scienze Fisiche, Matematiche e Naturali — Via Accademia delle Scienze 6; Via Maria Vittoria 3, Torino (208).
- Atti Convegno Annu., Assoc. Geofis. Ital.**  
Atti del Convegno Annuale, Associazione Geofisica Italiana — Roma.
- Atti Fond. Ronchi (Italy)**  
Atti della Fondazione Giorgio Ronchi e Contributi dell'Istituto Nazionale di Ottica — Via S.Leonardo 79, Arcetri-Firenze, Italy.
- Atti Semin. Mat. Fis. Univ. Modena (Italy)**  
Atti del Seminario Matematico e Fisico dell'Università di Modena — Modena.
- Atti Soc. Peloritana Sci. Fis. Mat. Nat. (Italy)**  
Atti della Società Peloritana di Scienze Fisiche Matematiche e Naturali — Università di Messina, Messina.
- Austral. J. appl. Sci.**  
Australian Journal of Applied Science — Commonwealth Scientific and Industrial Research Organization, 314 Albert Street, East Melbourne, C2, Victoria.
- Austral. J. Phys.**  
Australian Journal of Physics — Commonwealth Scientific and Industrial Research Organization, 314 Albert Street, East Melbourne, C2, Victoria.
- Austral. J. Sci.**  
Australian Journal of Science — Australian and New Zealand Association for the Advancement of Science, Science House, 157-161 Gloucester Street, Sydney.



- Automat. Elect. tech. J. (USA)**  
Automatic Electric Technical Journal — Automatic Electric Laboratories Inc., Northlake, Illinois.
- Automat. remote Control (USA)**  
Automation and Remote Control — Instrument Society of America, 313 Sixth Avenue, Pittsburgh 22, Pennsylvania. [A translation of: Avtomatika i Telemekhanika].
- Automatica si Electronica (Rumania)**  
Automatica si Electronica — Str. Ion Ghica 3, Bucuresti.
- Automatisme (France)**  
Automatisme — Dunod, 92 Rue Bonaparte, Paris 6.
- Avhandl. Norske VidenskAkad. Oslo (Norway)**  
Avhandlingar utgitt av Det Norske Videnskaps-Akademi i Oslo. I. Matematisk-Naturvidenskaplige Klasse — Faculty of Mathematics and Science, University of Oslo, Blindern, per Oslo.
- Avtomat. i Telemekh. (USSR)**  
Avtomatika i Telemekhanika — Akademiya Nauk SSSR, Lenin Prospekt, Moscow. [A translation is published as: Automation and Remote Control].
- BBC Engng Monogr. (GB)**  
BBC Engineering Division Monographs — British Broadcasting Corporation Publications, 35 Marylebone High Street, London W1.
- BBC Nachr. (Germany)**  
BBC Nachrichten — Brown, Boveri, Mannheim.
- Beama J. (GB)**  
Beama Journal — British Electrical and Allied Manufacturers' Association, 36 Kingsway, London, WC2.
- Beitr. Plasma Physik (Germany)**  
Beiträge aus der Plasma Physik — Akademie-Verlag, Leipziger Strasse 3-4, Berlin, W8.
- Bell Lab. Record (USA)**  
Bell Laboratories Record — Bell Telephone Laboratories, 463 West Street, New York 14, NY.
- Bell Syst. tech. J. (USA)**  
Bell System Technical Journal — American Telephone and Telegraph Co., 195 Broadway, New York 7, NY.
- Ber. KernforschAnlage Jülich (Germany)**  
Berichte der Kernforschungsanlage Jülich — Postfach 447/449, Jülich/Rhld.
- Biul. Inst. Energetyki (Poland)**  
Biuletyn Instytutu Energetyki — [Published as inset in Energetyka].
- Bol. Fac. Ingen. Montevideo (Uruguay)**  
Boletín de la Facultad de Ingeniería y Agrimensura de Montevideo — Herrera y Reissig 565, Montevideo.
- Brennstoff-Wärme-Kraft (BWK) (Germany)**  
BWK. Brennstoff-Wärme-Kraft — VDI-Verlag, Düsseldorf. Publisher: Springer-Verlag, Berlin, Göttingen and Heidelberg.
- Brit. Commun. and Electronics**  
British Communications and Electronics — Heywood, Drury House, Russell Street, Drury Lane, London WC2.
- Brit. J. appl. Phys.**  
British Journal of Applied Physics — Institute of Physics and the Physical Society, 47 Belgrave Square, London, SW1.
- Brit. J. Radiol.**  
British Journal of Radiology — British Institute of Radiology, 32 Welbeck Street, London W1.
- Brit. Kinematogr.**  
British Kinematography — British Kinematograph Society, 164 Shaftesbury Avenue, London WC2.
- Brit. Power Engng**  
British Power Engineering — George Newnes, Tower House, Southampton Street, London WC2.
- Brit. Stand.**  
British Standards — British Standards Institution, 2 Park Street, London, W1.
- Brit. Weld. J.**  
British Welding Journal — Institute of Welding, 54 Princes Gate, London, SW7; British Welding Research Association, 19 Fitzroy Square, London, W1.
- Brown Boveri Rev. (Switzerland)**  
Brown Boveri Review — Brown, Boveri, Baden, Switzerland; 75 Victoria Street, London, SW1.
- Bul. Inst. Politeh. Bucuresti (Rumania)**  
Buletinul Institutului Politehnic București — Calea Grivitei 132, București.
- Bul. Inst. Politeh Iasi (Rumania)**  
Buletinul Institutului Politehnic din Iasi (Serie Nouă) — Polytechnic Institute, Iasi.
- Bull. Acad. Polon. Sci. Ser. Sci. math. astron. phys. (Poland)**  
Bulletin de l'Académie Polonaise des Sciences. Série des Sciences Mathématiques, Astronomiques et Physiques — Polish Academy of Sciences, Distribution Centre for Scientific Publications, Pałac Kultury i Nauki, Warszawa.
- Bull. Acad. Polon. Sci. Ser. Sci. tech. (Poland)**  
Bulletin de l'Académie Polonaise des Sciences. Série des Sciences Techniques — Polish Academy of Sciences, Distribution Centre for Scientific Publications, Pałac Kultury i Nauki, Warszawa.
- Bull. Acad. Roy. Belgique Cl. Sci.**  
Bulletin de la Classe des Sciences de l'Académie Royale de Belgique — Palais des Académies, rue Ducale 1, Bruxelles.
- Bull. Acad. Sci. USSR, Geophys. Ser. (USA)**  
Bulletin of the Academy of Sciences of the USSR, Geophysics Series — Russian Translation Department, American Geophysical Union, 1515 Massachusetts Avenue, Washington 5, DC. [A translation of: Izvestiya Akademii Nauk SSSR. Seriya Geofizicheskaya].
- Bull. Acad. Sci. USSR, phys. Ser. (USA)**  
Bulletin of the Academy of Sciences of the USSR, Physical Series — Columbia Technical Translations, 5 Vermont Avenue, White Plains, New York, NY. [A translation of: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya].
- Bull. Amer. Meteorol. Soc.**  
Bulletin of the American Meteorological Society — 45 Beacon Street, Boston 8, Massachusetts.
- Bull. Amer. Phys. Soc.**  
Bulletin of the American Physical Society — Columbia University, New York 27, NY.
- Bull. Assoc. Suisse Elect. (Switzerland)**  
Bulletin de l'Association Suisse des Électriciens. (Organe Commun de l'Association Suisse des Électriciens [ASE] et de l'Union des Centrales Suisses d'Electricité [UCS]) — Seefeldstrasse 301, Zürich 8.
- Bull. astron. (France)**  
Bulletin Astronomique — L'Observatoire de Paris, 61 Avenue de l'Observatoire, Paris 14. Publisher: Gauthier-Villars, 55 Quai des Grands-Augustins, Paris 6.
- Bull. Calcutta Math. Soc. (India)**  
Bulletin of the Calcutta Mathematical Society — 92 Upper Circular Road, Calcutta 9.
- Bull. elect. Engng Educ. (GB)**  
Bulletin of Electrical Engineering Education — Manchester College of Science and Technology, Manchester 1.
- Bull. Electrotech. Lab. (Japan)**  
Bulletin of the Electrotechnical Laboratory — 2 chome, Nagata-cho, Chiyoda-ku, Tokyo.
- Bull. Fac. Engng Yokohama Nat. Univ. (Japan)**  
Bulletin of the Faculty of Engineering of Yokohama National University — Ohka-Machi, Minami-Ku, Yokohama.
- Bull. Inst. Chem. Res. Kyoto Univ. (Japan)**  
Bulletin of the Institute for Chemical Research, Kyoto University — Kyoto.
- Bull. Inst. Internat. Froid**  
Bulletin de l'Institut International du Froid (French/English edition) — 177 Boulevard Malesherbes, Paris 17, France.
- Bull. Inst. Internat. Statist.**  
Bulletin of the Institute for International Statistics — [Abstracted by Mathematical Reviews].
- Bull Inst. Metals (GB)**  
Bulletin of the Institute of Metals — Issued as inset in the Journal of the Institute of Metals [J. Inst. Metals].
- Bull. Inst. Nuclear Sci. "Boris Kidrich" (Yugoslavia)**  
Bulletin of the Institute of Nuclear Sciences "Boris Kidrich" — PO Box 522, Beograd.
- Bull. Inst. Phys. Atomic Res. (Bulgaria)**  
Bulletin of the Institute of Physics and Atomic Research — Bulgarian Academy of Sciences, Faculty of Mathematical and Physical Sciences, Sofia.
- Bull. Internat. Railway Congr. Assoc.**  
Monthly Bulletin of the International Railway Congress Association [English edition] — 19 Rue du Beau-Site, Bruxelles, Belgium.
- Bull. JSME (Japan)**  
Bulletin of the Japan Society of Mechanical Engineers — Nihon Kikaku Kyokai Building, 89 Akasaka-Hitotsugi-cho Minato-ku, Tokyo.



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- Bull. Oerlikon (Switzerland)**  
Bulletin Oerlikon — Oerlikon Engineering Company, Zürich 50; Oerlikon Ltd., Victoria House, Southampton Row, London, WC1.
- Bull. Res. Coun. Israel**  
Bulletin of the Research Council of Israel. Section A (Chemistry); Section C (Technology); Section F (Mathematics and Physics) — Publisher: Weizmann Science Press of Israel, POB 801, Jerusalem.
- Bull. S. Carolina Acad. Sci. (USA)**  
Bulletin of the South Carolina Academy of Science — Editorial office: Winthrop State College, Rock Hill, South Carolina.
- Bull. Sci. Assoc. Ingen. Montefiore [AIM] (Belgium)**  
Bulletin Scientifique de l'Association des Ingénieurs Électriciens sortis de l'Institut Electrotechnique Montefiore — 31 Rue Saint Gilles, Liège.
- Bull. sci. Cons. Acad. Yougoslavie**  
Bulletin Scientifique Conseil des Academies de la RPF Yougoslavie — Ante Kovačića 1, Zagreb 1.
- Bull. Seismol. Soc. Amer.**  
Bulletin of the Seismological Society of America — 465 California Street, San Francisco 4, California.
- Bull. Soc. Franc. Elect.**  
Bulletin de la Société Française des Électriciens — 8-14 Avenue Pierre-Larousse, Malakoff (Seine).
- Bull. Soc. Franc. Mineral. Crist.**  
Bulletin de la Société Française de Minéralogie et de Cristallographie — Publisher: Masson, 120 Boulevard Saint-Germain, Paris 6.
- Bull. Soc. Roy. Belge Elect.**  
Bulletin de la Société Royale Belge des Electriciens — 1 Place du Trône, Bruxelles 1.
- Bull. Soc. Roy. Sci. Liege (Belgium)**  
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Nukleonik — Springer-Verlag, Heidelberger Platz 3,  
Berlin-Wilmersdorf; Postfach 3027, Heidelberg 1.

## Nukleonika (Poland)

Nukleonika — Polska Akademia Nauk, Agent: CKPW  
"Ruch", ul. Srebrna 12, Warszawa.

## Nuovo Cimento (Italy)

Il Nuovo Cimento — Società Italiana di Fisica. Publication  
address: Nicola Zanichelli, Via Irnerio 34, Bologna.

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## Observatory (GB)

Observatory — Royal Greenwich Observatory, Herstmonceux  
Castle, Hailsham, Sussex. Agents: Wm. Dawson and Sons,  
Cannon House, Macklin Street, London, WC2.

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Occasional Notes of the Royal Astronomical Society  
— Succeeded by: Quarterly Journal of the Royal  
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L'Onde Électrique — Société Française des Electroniciens  
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Malakoff (Seine). Publisher: Editions Chiron, 40 rue de  
Seine, Paris 6.

## Optica Acta (GB)

Optica Acta — Taylor and Francis, Red Lion Court,  
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1155 Sixteenth Street, NW, Washington, DC. [A translation  
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Optik — Wissenschaftliche Verlagsgesellschaft, Postfach 40,  
Stuttgart N.

## Optika i Spektrosk. (USSR)

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## Österr. Ingen.-Z. (Austria)

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## PTT Bedrijf (Netherlands)

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12 Kortenaerkade, Den Haag.

## Pakistan J. Sci.

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## Pakistan J. sci. industr. Res.

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39 Garden Road, Karachi 3.

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## Pap. Instn Post Off. Elect. Engrs (GB)

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Matematičara i Fizičara [Societas Mathematicorum et  
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Philosophy of Science — [Abstracted by Mathematical  
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Photographic Journal — Royal Photographic Society,  
16 Princes Gate, London, SW7.

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## Phys. Chem. Glasses (GB)

Physics and Chemistry of Glasses (Section B of the Journal  
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## Phys. of Fluids (USA)

Physics of Fluids — American Institute of Physics,  
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- Prace Inst. Łączności (Poland)  
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- Prace Inst. Tele-i Radiotech. (Poland)  
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- Prace PIT (Poland)  
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- Prace Przemysł. Inst. Elektroniki (Poland)  
Prace Przemysłowego Instytutu Elektroniki — ul. Długa 44/50, Warszawa.
- Prace Ústavu pro Elektrotech. CSAV (Czechoslovakia)  
Prace Ústavu pro Elektrotechniku ČSAV — Československá Akademie Ved, Narodní tř. 3, Praha 1.
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- Pribory i Tekh. Eksper. (USSR)  
Pribory i Tekhnika Eksperimenta — Agent: Mezhdunarodnaya Kniga, Moscow. [A translation is published as: *Instruments and Experimental Techniques*.]
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Proceedings of the Automobile Division, Institution of Mechanical Engineers — 1 Birdcage Walk, London, SW1.
- Proc. Cambridge Phil. Soc. (GB)  
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- Proc. Inst. Radio Engrs (USA)  
Proceedings of the Institute of Radio Engineers — 1 East 79th Street, New York 21, NY.
- Proc. Instn Civil Engrs (GB)  
Proceedings of the Institution of Civil Engineers — Great George Street, London, SW1.
- Proc. Instn Elect. Engrs (GB)  
Proceedings of the Institution of Electrical Engineers, Part A (Power Engineering); Part B (Electronic and Communication Engineering, including Radio Engineering); Part C (Monographs) — Savoy Place, London, WC2.
- Proc. Instn Elect. Engrs Paper, Proc. Instn Elect. Engrs Monogr. (GB)  
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- Proc. Iowa Acad. Sci. (USA)  
Proceedings of the Iowa Academy of Science — Iowa State University, Ames, Iowa.
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- Proc. Math. Phys. Soc. UAR (Egypt)  
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- Proc. Nat. Acad. Sci. USA  
Proceedings of the National Academy of Sciences of the United States of America — 2101 Constitution Avenue, Washington 25, DC.
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- Proc. Roy. Irish Acad.**  
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- Proc. Roy. Soc. (GB)**  
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- Proc. Roy. Soc. Edinburgh (GB)**  
Proceedings of the Royal Society of Edinburgh. Section A (Mathematical and Physical Sciences) — 22 George Street, Edinburgh, 2.
- Proc. Roy. Soc. Victoria (Australia)**  
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- Proc. Univ. Durham Phil. Soc. (GB)**  
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- Proc. Vibration Problems (Poland)**  
Proceedings of Vibration Problems — Polish Academy of Sciences. Institute of Basic Technical Problems. Distribution Centre for Scientific Publications, Pałac Kultury i Nauki, Warszawa.
- Prod. Engng (USA)**  
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- Prof. Notes Meteorol. Off. (GB)**  
Professional Notes. Meteorological Office (Air Ministry) — HM Stationery Office, Kingsway, London, WC2.
- Progr. Materials Sci. (GB)**  
Progress in Materials Science (Incorporating: Progress in Metal Physics) — Pergamon Press, Headington Hill Hall, Oxford; 4 & 5 Fitzroy Square, London, W1.
- Progr. theor. Phys. (Japan)**  
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- Progr. theor. Phys. Suppl. (Japan)**  
Supplement of the Progress of Theoretical Physics — Research Institute for Fundamental Physics, and the Physical Society of Japan. Publication Office: Yukawa Hall, Kyoto University, Kyoto.
- Przegląd Elektron. (Poland)**  
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- Pubbl. Ist. Elettrotec. Naz. Ferraris (Italy)**  
Pubblicazioni dell' Istituto Elettrotecnico Nazionale "Galileo Ferraris" — Corso Massimo d'Azeglio 42, Torino.
- Publ. Astron. Soc. Japan**  
Publications of the Astronomical Society of Japan — Tokyo Astronomical Observatory, Mitaka, Tokyo.
- Publ. Astron. Soc. Pacific (USA)**  
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- Publ. Dominion Astrophys. Obs. (Canada)**  
Publications of the Dominion Astrophysical Observatory, Victoria, British Columbia — Dominion Astrophysical Observatory, Victoria, BC.
- Publ. Dominion Obs. (Canada)**  
Publications of the Dominion Observatory, Ottawa — Dominion Observatory, Department of Mines and Technical Surveys, Ottawa.
- Publ. Elektroteh. Fak. Univ. Beogradu (Yugoslavia)**  
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- Publ. Inst. Roy. Meteorol. Belgique**  
Publications, Institut Royal Météorologique de Belgique. Série A, format in 4°; Série B, format in 8° — 3 Avenue Circulaire, Uccle-Bruxelles 18.
- QST (USA)**  
QST — American Radio Relay League, 38 La Salle Road, West Hartford 7, Connecticut.
- Quad. Stud. Not. (Italy)**  
Quaderni di Studi e Notizie — Società Edison, Foro Bonaparte 31, Milano.
- Quart. appl. Math. (USA)**  
Quarterly of Applied Mathematics — Box 1885, Brown University, Providence 12, Rhode Island.
- Quart. J. Mech. appl. Math. (GB)**  
Quarterly Journal of Mechanics and Applied Mathematics — Clarendon Press, Oxford.
- Quart. J. Roy. Astron. Soc. (GB)**  
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- Quart. J. Roy. Meteorol. Soc. (GB)**  
Quarterly Journal of the Royal Meteorological Society — 49 Cromwell Road, London, SW7.
- RC Accad. Naz. Lincei (Italy)**  
Atti dell' Accademia Nazionale dei Lincei. Rendiconti. Classe di Scienze Fisiche, Matematiche e Naturali — Via della Lungara 10, Roma.
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Rendiconti dell' Istituto Superiore di Sanità — Fondazione Emanuele Paternò, Viale Regina Elena 299, Roma.
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- R & D (GB)**  
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- Radiation Research (USA)**  
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- Radio Mentor (Germany)**  
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Radiology — Radiological Society of North America, 713 E. Genesee Street, Syracuse 2, New York, NY.
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Revue A — Presses Académiques Européennes, 98 Chaussée de Charleroi, Bruxelles 6.
- Rev. Acad. Cienc. Zaragoza (Spain)  
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- Rev. Fac. Cienc. Univ. Lisboa B (Portugal)  
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Wireless World — Iliffe Electrical Publications,  
Dorset House, Stamford Street, London, SE1.
- Wiss. Z. Hochsch. Elektrotech. Ilmenau (Germany)  
Wissenschaftliche Zeitschrift der Hochschule für  
Elektrotechnik Ilmenau — Strasse der Jungen Techniker 21,  
Ilmenau.
- Wiss. Z. Hochsch. Maschinenbau Karl-Marx-Stadt (Germany)  
Wissenschaftliche Zeitschrift der Hochschule für  
Maschinenbau Karl-Marx-Stadt — Karl-Marx-Stadt.
- Wiss. Z. Humboldt-Univ. Berlin math.-nat. Reihe (Germany)  
Wissenschaftliche Zeitschrift der Humboldt-Universität zu  
Berlin, Mathematisch-naturwissenschaftliche Reihe  
— Unter den Linden 6, Berlin, W8.
- Wiss. Z. Tech. Hochsch. Dresden (Germany)  
Wissenschaftliche Zeitschrift der Technischen Hochschule  
Dresden — Title changed to: Wissenschaftliche Zeitschrift  
der Technischen Universität Dresden [Wiss. Z. Tech. Univ.  
Dresden].
- Wiss. Z. Tech. Hochsch. Otto von Guericke Magdeburg (Germany)  
Wissenschaftliche Zeitschrift der Technischen Hochschule  
Otto von Guericke Magdeburg — Boleslav-Bierut-Platz 5,  
Magdeburg.
- Wiss. Z. Tech. Univ. Dresden (Germany)  
Wissenschaftliche Zeitschrift der Technischen Universität  
Dresden (Formerly: Wissenschaftliche Zeitschrift der  
Technischen Hochschule Dresden) — Mommsenstrasse 13,  
Dresden, A 27.
- World Power Conf., Gen. Rep. and Papers  
General Reports and Papers read before the World Power  
Conference — International Executive Council, 201-2 Grand  
Buildings, Trafalgar Square, London, WC2.
- World Power Engng (GB)  
World Power Engineering — Heywood, Drury House, Russell  
Street, London, WC2.
- Z. angew. Math. Mech. (Germany)  
Zeitschrift für angewandte Mathematik und Mechanik  
— [Abstracted by Mathematical Reviews].
- Z. angew. Math. Phys. (Switzerland)  
Zeitschrift für angewandte Mathematik und Physik  
— Verlag Birkhäuser, Elisabethenstrasse 15, Basel 10.
- Z. angew. Phys. (Germany)  
Zeitschrift für angewandte Physik — Springer-Verlag,  
Heidelberger Platz 3, 1 Berlin-Wilmersdorf;  
Postfach 3027, 69 Heidelberg 1.
- Z. Astrophys. (Germany)  
Zeitschrift für Astrophysik — Springer-Verlag, Heidelberg  
Platz 3, 1 Berlin-Wilmersdorf; Postfach 3027,  
69 Heidelberg 1.
- Z. Elektrochem. (Germany)  
Zeitschrift für Elektrochemie — Verlag Chemie, Postfach  
149, Papellallee 3, 694 Weinheim/Bergstrasse.
- Z. Geophys. (Germany)  
Zeitschrift für Geophysik — Physica-Verlag, Münzstrasse 2,  
Würzburg 2.
- Z. InstrumKde (Germany)  
Zeitschrift für Instrumentenkunde — Friedr. Vieweg,  
Postfach 185, Burgplatz 1, Braunschweig.
- Z. Naturforsch. (Germany)  
Zeitschrift für Naturforschung (a): Astrophysik, Physik  
und physikalische Chemie — Postfach 61, (14b) Tübingen.
- Z. Phys. (Germany)  
Zeitschrift für Physik — Springer-Verlag, Heidelberg  
Platz 3, 1 Berlin-Wilmersdorf; Postfach 3027, Heidelberg 1.
- Z. phys. Chem., Frankfurt (Germany)  
Zeitschrift für physikalische Chemie. Neue Folge  
— Akademische Verlagsgesellschaft, Cronstettenstrasse 6a,  
Frankfurt am Main; Academic Books, 129 Queensway,  
London, WC2; Walter J. Johnson, 111 Fifth Avenue,  
New York 8, NY.
- Z. phys. Chem. Leipzig (Germany)  
Zeitschrift für physikalische Chemie — Akademische  
Verlagsgesellschaft Geest und Portig K.-G.,  
Sternwartenstrasse 8, Leipzig, C1.
- Z. wiss. Mikr. (Germany)  
Zeitschrift für wissenschaftliche Mikroskopie und  
mikroskopische Technik — S.Hirzel Verlag, Stuttgart.
- Z. wiss. Photogr. (Germany)  
Zeitschrift für wissenschaftliche Photographie, Photophysik  
und Photochemie — J.A.Barth, Salomonstrasse 18B,  
Leipzig, C1.
- Zeszyty Naukowe Politech. Lodz. Elektryka (Poland)  
Zeszyty Naukowe Politechniki Lodzkiej Elektryka  
— Wydawnictwo Naukowych Politechniki Lodzkiej,  
Gdanska 155, Lodz.
- Zh. eksper. teor. Fiz. (USSR)  
Zhurnal Éksperimental'noi i Teoreticheskoi Fiziki  
— Akademiya Nauk SSSR, Lenin Prospekt, Moscow.  
Editorial address: Varob'evskoe shosse 2, Moscow V-334.  
[A translation is published as Soviet Physics-JETP].
- Zh. tekh. Fiz. (USSR)  
Zhurnal Tekhnicheskoi Fiziki — Akademiya Nauk SSSR,  
Lenin Prospekt, Moscow. [A translation is published as  
Soviet Physics-Technical Physics].
- Zh. vychislit. Mat. i mat. Fiz. (USSR)  
Zhurnal Vychislitel'noi Matematiki i Matematicheskoi  
Fiziki — Akademiya Nauk SSSR, Lenin Prospekt, Moscow.



# ABSTRACTING JOURNALS

Abstracts signed with the following names are reproduced from other abstracting journals with the kind permission of the organizations concerned, to whom grateful acknowledgment is made.

## Applied Mechanics Reviews

American Society of Mechanical Engineers, United Engineering Centre, 345 East 47th Street, New York 17, NY.  
Editorial Office: Southwest Research Institute, 8500 Culebra Road, San Antonio 6, Texas.

## Associated Elect. Industr. (Manchester)

Associated Electrical Industries (Manchester) Limited, Research Laboratory Technical News Bulletin (Formerly: Metropolitan-Vickers Technical News Bulletin) — Trafford Park, Manchester 17.

## Central Electricity Generating Board Digest

Friars House, 157-168 Blackfriars Road, London, SE1.

## Copper Abstracts

Copper Development Association, 55 South Audley Street, London, W1.

## Electrical Research Association

British Electrical and Allied Industries Research Association, Cleeve Road, Leatherhead, Surrey.

## Inst. Internat. du Froid

Bulletin de l'Institut International du Froid — 177 Boulevard Malesherbes, Paris 17.

## Instrument Abstracts

Instrument Abstracts — Compiled by the British Scientific Instrument Research Association (SIRA) and published by Taylor and Francis, Red Lion Court, Fleet Street, London, EC4.

## Mathematical Reviews

American Mathematical Society, 190 Hope Street, Providence 6, Rhode Island.

## Metallurgical Abstracts

Institute of Metals, 17 Belgrave Square, London, SW1.

## Meteorological and Geostrophysical Abstracts

American Meteorological Society, 45 Beacon Street, Boston 8, Massachusetts.

## Metropolitan-Vickers

Metropolitan-Vickers Technical News Bulletin — Title changed to: Associated Electrical Industries (Manchester) Limited, Research Laboratory Technical News Bulletin [Signature: Associated Electrical Industries (Manchester)].

## Nuclear Science Abstracts

US Atomic Energy Commission, Office of Technical Information, PO Box 62, Oak Ridge, Tennessee. Obtainable from: US Government Printing Office, Washington 25, DC.

## Photographic Abstracts

Royal Photographic Society of Great Britain, 16 Princes Gate, London, SW7.

## Railway Engineering Abstracts

Published by the Institution of Civil Engineers in association with British Railways and London Transport Executive. Subscription address: Institution of Civil Engineers, Great George Street, Westminster, London, SW1.

## Rheology Abstracts

Published for the British Society of Rheology by: Pergamon Press, 4 and 5 Fitzroy Square, London, W1; 122 East 55th Street, New York 22, NY.

## Scientific Instrument Research Association

Bulletin of the British Scientific Instrument Research Association — Title changed to: Instrument Abstracts.



# ERRATA

- Abstr. 3587 (1949) line 3: after "Soc." insert "Geophys. Suppl."  
 Abstr. 2456 (1959) line 4: for "368-74" read "868-74".  
 Abstr. 12545 (1959) line 4: for "1959" read "1957".  
 Author Index (1960) p.2269b: for "Kaufman,S." read "Kaufman,A.S.".   
 Author Index (1960) p.2335a: Moore,M.S., Miller,L.G. and Simpson,O.D. text  
 should read: "Slow neutron total and fission cross  
 sections of  $U^{235}$ ."  
 Abstr. 7560 (1960) line 3: for " $Cd^{40}(p,p')Ca^{40}$ " read " $Ca^{40}(p,p')Ca^{40}$ "  
 Abstr. 9693(1960): insert Journal reference as follows: Zh. eksper. teor. Fiz.  
 (USSR), Vol. 37, No. 5(II), 1273-80 (Nov., 1959).  
 In Russian. English translation in: Soviet Physics—  
 JETP (USA), Vol. 37(10), No. 5, 907-12 (May, 1960)  
 Abstr. 20341 (1960) line 2: for "M.Yasumo" read "M.Yasuno."

- Abstr. 362 (1961) line 3: for "G.Z.Gershuin" read "G.Z.Gershuni".  
 Abstr. 660 (1961) line 3: for "S.D.Broom" read "S.D.Bloom".  
 Abstr. 1265 (1961) line 2: for "J.H.Page" read "J.H.Pace".  
 Abstr. 2293 (1961) line 3: for "A.M.van Kleef" read "T.A.van Kleef".  
 Abstr. 4704 (1961) line 3: for "G.E.Gershuni" read "G.Z.Gershuni".  
 Abstr. 5945 (1961) line 2: for "Z.Z.Solov'eva" read "Z.I.Solov'eva".  
 Abstr. 7354 (1961) line 2: for "A.Mussa" read "A.Moussa".  
 Abstr. 7355 (1961) line 2: for "M.A.Moussa" read "A.Moussa".  
 Abstr. 8816 (1961) line 2: for "A.M.Van Kleef" read "T.A.M.van Kleef".  
 Abstr. 14215 (1961) line 11: for "J.F.Cornwall" read "J.F.Cornwell".  
 Abstr. 14473 (1961) line 7: for "law pressure" read "low pressure"; for " $ohm.cm^{-1}$ " read  
 " $ohm.cm.$ "  
 Abstr. 15152 (1961) line 8: should read as follows:

$$D = \left\{ K_0 \exp \left( -\frac{Q_G}{RT} \right) \cdot \exp \left[ -\frac{Q^1}{R} \left( \frac{1}{T} - \frac{1}{T_m} \right) \right] \right\}^n$$

For line 12 of text to end, see next column, lines 4 to 13.  
 p. 1450, column 2: the cross-reference entry at the top of this  
 column should appear immediately preceding Abstr. 15153.

- Abstr. 15942 (1961) line 3: for "V.V." read "EXPLOSIVES";  
 line 6: for "body (made of "V.V.")" read "explosive".  
 Abstr. 16581 (1961) line 2: for "L.P.Pitayevskii" read "L.P.Pitaevskii".  
 Abstr. 17020 (1961) line 2: for "T.Meyer-Kuckuk" read "T.Mayer-Kuckuk".  
 Abstr. 17305 (1961) line 3: for "L.Grenier-Besson" read "M.L.Grenier-Besson".  
 Abstr. 17685 (1961) line 13: for " $2 \times 10^{-10} cm^2$ " read " $2 \times 10^{-16} cm^2$ ".  
 Abstr. 18358 (1961) line 4: for "1961" read "1960".  
 Abstr. 18429 (1961): last lines of abstract should read " [English translation in:  
 Soviet Physics JETP (USA)] ."  
 Abstr. 19245 (1961) line 5: insert "19183" after "Abstr.".   
 Abstr. 19455 (1961) line 3: for "A.K.Bal'ter" read "A.K.Val'ter".  
 Abstr. 19562 (1961) line 3: for "1961" read "1960".  
 Abstr. 19565 (1961) line 8: for " $H^3$ " read " $^3H$ ".  
 line 12: for "M.Salmon" read "A.J.Salmon".  
 Abstr. 19768 (1961) line 1: for "FLOTATRON" read "FLOTATION".  
 Abstr. 19803 (1961) line 5: for "from" read "at".  
 line 6: for "In spite of" read "Due to".  
 Abstr. 20211 (1961) line 3: for "C.Lomaglio" read "G.Lomaglio".  
 Abstr. 20616 (1961) line 3: for "M.A.Krÿvohlaz" read "M.O.Krÿvohlaz".  
 Abstr. 20788 (1961) line 11: for "426-8" read "428-9".  
 Abstr. 21109 (1961) lines 7 and 8: for " $\pm 1.5\%$ " and " $\pm 4\%$ " read " $\pm 1.5^0$ ", and " $\pm 4^0$ ".



# ERRATA

- Abstr. 113 (1962) line 13: for "fringe-constant" read "fringe-contrast".
- Abstr. 193 (1962) line 9: for "quadruple" read "quadrupole".
- Abstr. 383 (1962) line 14: for " $\frac{1}{2}$  for  $\text{Sn}^{113}\text{g}$ " read " $\frac{1}{2}$  for  $\text{Sn}^{113}\text{g}$ ".
- line 16: for " $(.035 \pm 0.08)$  barn" read " $(0.35 \pm 0.08)$  barn".
- Abstr. 715 (1962) line 4: for "S.Hionoya" read "S.Shionoya".
- Abstr. 800 (1962) insert journal reference: "Proc. Phys. Soc. (GB), Vol. 78, Pt 5(ii), 979-987 (Nov. 15, 1961)".
- Abstr. 1426 (1962) line 3: for "V.I.Granovskii" read "V.L.Granovskii".
- Abstr. 1668 (1962) line 10: for "on" read "an".
- Abstr. 2518 (1962) line 12: for "G" read " $\gamma$ ".
- Abstr. 2758 (1962) line 2: for "I.G.Ivanov" read "A.G.Ivanov".
- Abstr. 3402 (1962) line 4: for " $p_{1/2} - p_{1/2}$ " read " $p_{1/2} - p_{3/2}$ ".
- Abstr. 3411 (1962) line 1: for "INTERACTION" read "INTERACTIONS".
- Abstr. 3859 (1962) line 2: for "Q.Béthoux" read "O.Béthoux".
- line 5: after "observed" insert "plot".
- Abstr. 3975 (1962) line 9: for "the" read "that".
- Abstr. 4186 (1962) line 4: for "singer" read "singlet".
- Abstr. 4237 (1962) line 8: for "Skornikova's" read "Ikornikova's".
- Abstr. 4409 (1962) last line: for "isotropy" read "anisotropy".
- Abstr. 4444 (1962) line 6: insert "rotation" after "single-crystal".
- Abstr. 4921 (1962) line 10: insert "term" after "nonsymmetric".
- Abstr. 5011 (1962) line 7: for "of" read "in".
- Abstr. 5615 (1962) line 13: for " $\epsilon$ " read " $\bar{\epsilon}$ ";
- line 17: the equation should read: " $(d\sigma/d\Omega)_p = [(1-P) + 2P \sin^2 \phi] (d\sigma/d\Omega)_{p=0}$ ".
- Abstr. 6220 (1962) line 12: for "distributed" read "disubstituted".
- line 13: for "for five numbered" read "four five-membered".
- Abstr. 6579 (1962) line 7: for "equilibrium" read "equivalent".
- Abstr. 6596 (1962) line 11: for " $\text{Te}^{+}$ " read " $\text{Tl}^{+}$ ".
- Abstr. 6914 (1962) line 7: for "the reduction" read "an increase".
- Abstr. 6932 (1962) line 7: insert "work is" before "corrected".
- Abstr. 7193 (1962) abstractor's signature: for "R.Eisenschitz" read "R.Eisenschitz".
- Abstr. 7405 (1962) line 3: for "Vol. 26" read "Vol. 52".
- Abstr. 7634 (1962) line 8: for "sheats" read "sheaths".
- Abstr. 7653 (1962) line 4: for "H.P.Bazhanova" read "N.P.Bazhanova".
- Abstr. 7688 (1962) line 2: for "Yu.Ts.Ogenesyan" read "Yu.Ts.Oganessian".
- Abstr. 8297 (1962) line 5: for "0.1 mole.  $\text{LiCl}$ " read "0.1 mole%  $\text{K}_2\text{SO}_4$ ".
- Abstr. 8466 (1962) line 15: insert "up" before "in".
- Abstr. 8690 (1962) line 3: for "1690-1" read "1691".
- Abstr. 9193 (1962) line 3: for "329-40" read "319-24".
- Abstr. 9403 (1962) line 4: insert "In Rumanian" after journal reference.
- Abstr. 9463 (1962) line 10: for " $\text{deg C}^{-1}$ " read " $\text{deg K}^{-1}$ ".
- Abstr. 9490 (1962) line 2: for "J.Rayward" read "J.Raynard".
- Abstr. 9545 (1962) line 9: for "was" read "were".
- Abstr. 10237 (1962) line 4: for "completed" read "computed".
- Abstr. 10421 (1962) line 4: for "Vol. 125" read "Vol. 126".
- Abstr. 10657 (1962) line 1: for "I" read "I(1)".
- Abstr. 10658 (1962) line 1: for "II" read "I(2)".
- Abstr. 10659 (1962) line 1: for "III" read "I(3)".
- Abstr. 10696 (1962) line 13: for "8.43 n.m." read "0.43 n.m.".
- Abstr. 10738 (1962) line 4: for "Chzha-Tszyan [Cha-Chien]" read "Chzhao-Tszyan [Chao-Chien].
- Abstr. 11052 (1962) line 3: for "P.G.Iouleas" read "P.Giouleas".
- Abstr. 11292 (1962) line 3: for "319-24" read "329-40".
- Abstr. 11658 (1962) line 5: for "Margenan" read "Margenau".
- Abstr. 11691 (1962) line 10: for "median" read "medium".
- Abstr. 11738 (1962) line 10: for " $\approx$ " read " $\sim$ ".
- Abstr. 11908 (1962) line 9: for " $G\pi^2/\hbar c \sim (GK/\hbar c)^2$ " read " $G\pi^2/\hbar c \sim (G_K^2/\hbar c)^2$ ".
- Abstr. 12306 (1962) line 3: after "No. 7" insert "1893".
- Abstr. 12852 (1962) line 7: for "Kelvin-Hughes" read "Kelvin-Newton".
- Abstr. 13263 (1962) line 9: after "particles" omit "and".
- Abstr. 13301 (1962) line 12: for "kMc/s" read "kc/s".
- Abstr. 13411 (1962): at end of journal reference delete "In French".
- Abstr. 13466 (1962) line 3: for "Z.Naturforsch." read "Z. wiss. Photogr.".
- Abstr. 13491 (1962) line 4: for "K.K.La Mer" read "V.K.La Mer".
- Abstr. 13495 (1962) line 5: for "postulated" read "postulates".
- Abstr. 13527 (1962) line 8: for "on" read "and";
- line 10: for "on reciprocal" read "or reciprocal"; for "on permeability" read "or permeability";
- line 12: for "condensed" read "considered".
- Abstr. 13673 (1962) line 2: for "BOUNDARY VALUE PROBLEM" read "SALTUS VALUE PROBLEM".
- Abstr. 14009 (1962) line 12: for "triated" read "tritiated".
- Abstr. 14057 (1962) lines 10 and 15: delete "1387".
- Abstr. 14209 (1962) lines 15-16: for "in  $\text{ZnBr}_2$ " read "in gaseous  $\text{ZnBr}_2$ ".
- Abstr. 14395 (1962) line 8: for "ferroantiferro-magnetism" read "ferro/antiferro-magnetism".
- Abstr. 14489 (1962) line 2: for "A.N.Geritsen" read "A.N.Gerritsen".
- line 6: for "alloys" read "alloying".
- Abstr. 14709 (1962) line 12: for "stared" read "stored".
- Abstr. 14729 (1962) line 10: for "Ce orange" read "An orange".

# ERRATA

- Abstr. 15916 (1962) line 1: for "PHASE EQUATION" read "EQUATION OF STATE".
- Abstr. 16000 (1962) line 6: for "zone" read "some".
- Abstr. 16191 (1962) line 10: for "or" read "of".
- Abstr. 16238 (1962) line 13: for "in" read "a";  
line 17: for "goes both" read "goes for both".
- Abstr. 16567 (1962) line 15: after "360°C" insert "for diphenylbutadiene and  
at 460°C for phthalimide".
- Abstr. 16786 (1962) line 3: after "Izv." insert "Akad".
- Abstr. 17352 (1962) line 7: for  $C_{abc;d}^{\alpha}$  and  $C_{abc}^{\alpha}$  read " $C_{abc;d}^d$  and  $C_{abc}^d$ ".
- Abstr. 17951 (1962) line 9: for "beating" read "bearing".
- Abstr. 18967 (1962) lines 11, 12, and 14: for " $\tau$ " read " $\tau_1$ ".
- Abstr. 19525 (1962) line 5: for "quadrupole" read "quadruple".
- Abstr. 20149 (1962) lines 8 and 10: for "function" read "functional";  
line 13: for "functions" read "functionals".
- Abstr. 20168 (1962) line 8: for "p.f." read "r.f.".
- Abstr. 20408 (1962) line 5: for "( $\tau$ -meson)" read " $\xi$ -meson);  
lines 11 and 12: for " $\tau$ " read " $\xi$ ".
- Abstr. 20482 (1962) line 8: for "of" read "and".
- Abstr. 20535 (1962) line 8: for "Wurentingen" read "Würenlingen".
- Abstr. 20663 (1962) line 7: for " $Na^{22}$ " read " $Na^{21}$ ".
- Abstr. 20736 (1962) line 1: for title read "ANOMALOUS SPECTRAL INTENSITY  
MODIFICATION IN A HOLLOW-CATHODE DISCHARGE".
- Abstr. 20794 (1962) line 1: for "R-CENTROIDS" read "r-CENTROIDS".
- Abstr. 21112 (1962) line 19: for "bismuth" read "mechanism. Also it may be possible  
to find some materials other than bismuth".
- Abstr. 21203 (1962) line 1: for "THERMOELECTRIC" read "THERMIONIC".
- Abstr. 21270 (1962) line 3: after journal reference insert "In Russian".
- Abstr. 22231 (1962) line 12: for " $1.2 \times 10^{17}$ " read " $1-2 \times 10^{17}$ ".
- Abstr. 22610 (1962) line 14: for " $0^+$ " read " $0^{++}$ ".
- Abstr. 22625 (1962) line 6: for "911 MeV threshold" read "(911 MeV threshold)";  
line 7: for "1046 MeV threshold" read "(1046 MeV threshold)".
- Abstr. 22766 (1962) line 4: for "M.Valardes" read "M.Valadares".



# SUBJECT INDEX

## INTRODUCTION.

The entries in this index refer to the abstracts by their serial number, not by the page number. The entries are grouped under headings (underlined, e.g. "Abrasion") which represent, in the main, general categories or concepts rather than specific names. If a heading for a particular subject does not appear, a more general heading should be consulted; for example, "Zone plates" would be listed under "Diffraction"; "Barkhausen discontinuities" under "Magnetization process". There are numerous cross-references directing attention to related headings in other parts of the index.

Many of the headings are subdivided by the use of subheadings, which are indented (i.e. printed slightly to the right) and commence with a small letter (for example, see the subheadings under "Absorption").

## ARRANGEMENT OF HEADINGS AND SUBHEADINGS.

The headings are arranged throughout the index in alphabetical order according to British Standard 1749:1951 (the "word by word" system, not "reading right through"). The subheadings, with a few exceptions, are themselves arranged in alphabetical order under their respective headings. The exceptions (for example, see the subheadings under "Spectra", "Crystal structure, atomic") are cases where a more logical order is preferable to a purely alphabetical one.

## ARRANGEMENTS OF ENTRIES UNDER HEADINGS.

Entries are arranged in three alphabetical groups as follows. First group: generalities; second group: named substances (in words); third group: named substances (chemical formulae). If a search is being made for a particular substance, both the second and third alphabetical groups should be inspected since, for example, alumina may also be listed as  $\text{Al}_2\text{O}_3$ .

## COLLECTED LIST OF SUBJECT HEADINGS.

The alphabetical arrangement of the headings is the most convenient for locating a known heading quickly, but there may be other related headings elsewhere in the index of which the reader is unaware, and which he would only come across by accident. To assist the reader to discover all the headings appropriate to his subject, a collected list of the headings is given at the end of the index, which should be consulted as a matter of routine each time a search is made. In this list, the headings are not arranged in alphabetical order, but are grouped into sections by subject on the same basis as the arrangement of the abstracts in the monthly issues of Physics Abstracts. By using this list, the reader can quickly determine which are the headings appropriate to his subject, and they are then easily found in the main index in their alphabetical position.

## HEADINGS WITH NO ENTRIES.

Because physics is a developing subject, it is not possible to maintain the list of headings unchanged from year to year; it is subject to a continuous process of revision, with the introduction of new headings and subheadings, and the alteration and elimination of old ones. This process is a gradual one, however, and the great majority of the headings are the same as those of the previous year. To assist in maintaining the continuity of the index, all the headings in current use are printed each year, even those for which there are no abstracts to be recorded in the present volume. The latter are followed by the announcement "No entries this year"; this supplies confirmation that these headings have not been dropped from the index, and entries may reappear under them next year.

## ELEMENTS, COMPOUNDS AND OTHER SUBSTANCES.

The names of elements, their compounds, a few compounds of special interest (e.g. "Water") and a few common materials (e.g. "Wood", "Paper") are included as headings. Under these, as well as under the appropriate "subject" headings, are listed any abstracts which contain significant physical information about the element, compound or substance named; except, however, that abstracts listed under the following headings are not necessarily also listed under the substance name:

Atoms	Spectra
Molecules	Luminescence
Crystal structure, atomic	Raman spectra
All headings referring to nuclear properties, including Radioactivity	

(The entries under these headings are themselves arranged in alphabetical order of substance or nuclide names, so that a given substance can be readily located).

Inorganic compounds of the elements are listed under the first element in the chemical formula, and all the compounds of a given element are grouped under a single heading (e.g. "Sodium compounds"). Named alloys (e.g. Permalloy) are listed under the heading "Alloys"; alloys designated by their constituents (e.g.  $\text{Au}_3\text{Cu}$ ,  $\text{Au-Cu}$ ) are listed under the compounds of the first-named element (i.e. in these examples "Gold compounds"). All organic compounds are grouped under the single heading "Organic compounds", except polymers which are grouped under "Polymers", and those under special substance headings such as "Paper"; all the latter are listed in the collected list of headings at the end of the index.

BEFORE USING INDEX, CONSULT LIST OF SUBJECT HEADINGS PRINTED AT THE END

Abacs

See Nomograms.

Aberrations, optical

- See also Electron lenses; Ion optics; Optical instrument testing; Optics, geometrical; Particle optics.
- achromatization of dielec. mirrors using computer 17640
- aplanatism, equivalence of definitions 1252
- astigmatism, spher. aberr., and coma rel. to best image position 7320
- astrophot objective, coma, rel. to star positions on photo. plate 24070
- automatic correction, using digital computer 7333
- chromatic, transverse, in cemented doublets 19681
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See Neutrons and antineutrons.

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See Aerosols; Colloids; Emulsions; Foams; Powders; Sols; Suspensions.

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light sky

See Airglow.

## Nightglow

See Airglow.

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See Cosmic rays, showers and bursts.

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acoustic waves,ultrasonic  
Scattering  
acoustic waves  
acoustic waves,ultrasonic  
Semiconducting materials  
Semiconductors  
Solubility  
Solutions  
Sorption

Spectra  
inorganic liquids and solutions  
Thermoluminescence  
Transmission  
acoustic waves  
acoustic waves,ultrasonic  
Velocity  
acoustic waves  
acoustic waves,ultrasonic  
X-ray examination of materials  
liquids

## MECHANICS OF GASES

Acoustic streaming  
Aerodynamics  
Anemometers  
Compressibility  
gases  
Condensation  
Density  
gases  
Diffusion, gases  
thermal  
Flow  
gases  
Flowmeters  
Gases  
Humidity  
Hygrometers

Jets  
Liquefaction, gases  
Manometers  
Moisture  
Pressure  
Pumps  
Shock waves  
Supersonic flow  
Turbulence  
Vaporization  
Vapour pressure  
Viscometers  
Viscosity  
gases  
Vortices  
Waves

## LIQUID STATE

Absorption  
acoustic waves  
acoustic waves,ultrasonic  
Association  
liquids  
Breakdown, electric  
liquids  
Conductivity, electrical  
electrolytic  
Conductivity, thermal  
liquids  
Dielectric properties of substs.  
liquids and solutions  
Diffraction  
acoustic waves  
acoustic waves,ultrasonic  
Diffusion  
acoustic waves  
Diffusion, liquids  
measurement  
thermal  
Electroluminescence  
Equations of state  
liquids

Filters  
Heat of solution  
Interference  
acoustic waves  
Liquid crystals  
Liquids  
structure  
theory  
Luminescence  
inorganic [substances  
organic [substances  
Magnetic properties of  
Magnetic resonance and  
Membranes [relaxation  
Metals [and relaxation  
Nuclear magnetic resonance  
Nuclear quadrupole resonance  
Osmosis  
Paramagnetic resonance  
Polymers [and relaxation  
Reflection  
acoustic waves  
acoustic waves,ultrasonic

## Shock Waves

Detonation  
Explosions  
Schlieren systems  
Shock waves  
effects  
Supersonic flow

## GASEOUS STATE

<b>Absorption</b> acoustic waves acoustic waves,ultrasonic	<b>Diffusion</b> acoustic waves Diffusion, gases thermal	<b>Luminescence</b> gases Magnetic resonance and Molecules [relaxation intermolecular mechanics	<b>Scattering</b> acoustic waves acoustic waves,ultrasonic
<b>Association</b> gases	<b>Electroluminescence</b>	<b>Nuclear magnetic resonance</b> [and relaxation	<b>Sorption</b>
<b>Breakdown, electric</b> gases	<b>Equations of state</b> gases	<b>Nuclear quadrupole resonance</b>	<b>Spectra</b>
<b>Conductivity, thermal</b> gases	<b>Gases</b>	<b>Paramagnetic resonance and</b>	<b>Statistical mechanics</b>
<b>Dielectric properties of subst.</b> gases	<b>Helium</b> gas	<b>Reflection</b> [relaxation acoustic waves	<b>Thermoluminescence</b>
<b>Diffraction</b> acoustic waves acoustic waves,ultrasonic	<b>Interference</b> acoustic waves	<b>Refraction</b> acoustic waves,ultrasonic	<b>Transmission</b> acoustic waves acoustic waves,ultrasonic
	<b>Joule—Thomson effect</b>	<b>Refraction</b> acoustic waves	<b>Velocity</b> acoustic waves acoustic waves,ultrasonic
	<b>Kinetic theory</b> gases	<b>Refraction</b> acoustic waves,ultrasonic	

## VACUUM PHYSICS

Glass—metal seals  
Leak detection  
Sputtering  
Vacuum apparatus  
Vacuum gauges  
Vacuum pumps  
Vacuum technique

## VIBRATIONS . ACOUSTICS

Acoustics  
Elastic waves  
Shock waves  
Vibrations

### VIBRATIONS . ELASTIC WAVES

<b>Damping</b> Elastic waves Membranes Oscillations Piezoelectric oscillations Relaxation Resonators Seismic waves	<b>Shock waves</b> effects Vibrating bodies Vibrations excitation measurement Waves	<b>Radiation pressure</b> Reflection acoustic waves acoustic waves,ultrasonic Refraction acoustic waves acoustic waves, ultrasonic Resonators acoustic Scattering acoustic waves acoustic waves,ultrasonic	<b>Schlieren systems</b> Sound ranging Sound recording Sound reproduction Speech Transmission acoustic waves acoustic waves,ultrasonic Ultrasonics Velocity acoustic waves acoustic waves,ultrasonic
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## ACOUSTICS

<b>Absorption</b> acoustic waves acoustic waves,ultrasonic Acoustic analysis Acoustic generators Acoustic impedance Acoustic radiators Acoustic receivers Acoustics musical Acoustic streaming Acoustic transducers Acoustic wave propagation ultrasonic Acoustic waves effects Acoustoelectric effects Atmospheric acoustics Bells Biological effects of radiations	<b>Chemical effects of radiations</b> acoustic waves Diffraction acoustic waves acoustic waves,ultrasonic Dispersion, acoustic ultrasonic Doppler effect acoustics Ear Hearing Helium liquid, sound propagation Interference acoustic waves Magnetoacoustic effects Microphones Musical instruments Physical effect of radiations
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### Instruments and Measurements

Acoustic analysis Acoustic generators Acoustic measurement Acoustic radiators Acoustic receivers Acoustic resonators Acoustic transducers Acoustical laboratories Bells Hearing aids Intensity measurement acoustics	Interferometers acoustic waves Interferometry acoustic waves Microphones Sound recording Sound reproduction Stroboscopes Velocity measurement acoustic waves acoustic waves,ultrasonic
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### Noise . Architectural Acoustics

Architectural acoustics  
Echo  
Noise  
acoustic  
Noise abatement  
Reverberation



# OPTICS

Atmospheric optics  
Doppler effect  
  light  
Electro-optical effects  
Light  
  e.m. theory  
Light sources  
Optics

Photons  
Photophoresis  
Radiation  
Radiation pressure  
Velocity  
  light  
Velocity measurement  
  light

## PHOTOMETRY . COLORIMETRY

Bolometers  
Brightness  
Colour  
Colorimeters  
Colorimetry  
Densitometry  
Emissivity  
  
Illumination  
Photometers  
Photometry  
  light sources  
Pyrometers  
Radiation detectors

## GEOMETRICAL AND INSTRUMENTAL OPTICS

Aberrations, optical  
Dispersion, optical  
Filters, optical  
Glass  
Image converters  
Lenses  
  aspherical  
  photographic  
Light sources  
Luminescent devices  
Masers  
  optical  
Microscopes  
Microscopy  
Mirrors  
Optical constants  
Optical films  
Optical images  
Optical instruments  
Optical instrument testing  
Optical materials  
Optical pumping  
  
Optical systems  
Optics  
  geometrical  
  Prisms, optical  
  Projectors, optical  
  Quartz  
  Reflection  
    light  
  Reflectivity  
  Refraction  
    light  
  Refractive index  
    light  
  Refractive index measurement  
  Refractometers  
  Resolving power, optics  
  Schlieren systems  
  Stereoscopy  
  Stroboscopes  
  Telescopes  
  Visibility

## SPECTROSCOPY

Astronomical spectra  
Atmospheric spectra  
Monochromators  
Raman spectra  
  inorganic  
  organic  
Spectra  
  continuous  
  flames  
  resonance  
  atoms  
  inorganic molecules  
    diatomic  
    diatomic, radiofrequency  
    polyatomic  
    polyatomic, radiofrequency  
  inorganic liquids and solutions  
  inorganic solids  
    radiofrequency  
  organic molecules and substances  
    infrared  
    radiofrequency  
  
Spectral line breadth  
Spectrochemical analysis  
Spectrometers  
  accessories  
Spectrophotometers  
Spectrophotometry  
Spectroscopy  
  light sources  
Stark effect  
Temperature measurement  
  spectral methods  
Zeeman effect

## PHYSICAL OPTICS

Absorption  
  light  
Diffraction  
  light  
Diffraction gratings  
Diffusion, light  
Dispersions, optical  
Doppler effect  
  light  
Double refraction  
  flow  
  mechanical  
Electro-optical effects  
Filters, optical  
Interference  
  light  
Interferometers  
  light  
Interferometry  
  light  
Magneto-optical effects  
  
Optical constants  
Optical films  
Optical pumping  
Optical rotation  
Photoelasticity  
Pleochroism  
Polarimeters  
Polarized light  
Reflection  
  light  
Reflectivity  
Refraction  
  light  
Refractive index  
  light  
Scattering  
  light  
Transmission  
  light  
Transparency

## PHOTOGRAPHY

Cameras  
Cinematography  
  high-speed  
Densitometry  
Lenses  
  photographic  
Nuclear track emulsions  
Photographic light sources  
Photographic materials  
  sensitivity  
  
Photographic process  
  development  
Photography  
  applications  
  colour  
  high-speed  
  infrared  
Radiography

# HEAT . RADIATION

Calorimeters  
Calorimetry  
Combustion  
Conductivity, thermal  
  gases  
  liquids  
  solids  
  measurement  
Convection  
Cooling  
Cryostats

Earth  
  heat  
Flames  
Heat  
Heat conduction  
Heating  
Heat of adsorption  
Heat of combustion  
Heat of crystallization  
Heat of dissociation  
Heat of formation

Heat of fusion  
Heat of reaction  
Heat of solution  
Heat of sublimation  
Heat of transformation  
Heat of vaporization  
Heat of wetting  
Heat transfer  
Heat treatment  
High-temperature production  
  [and effects]

Latent heat  
Specific heat  
Temperature  
Temperature distribution  
Temperature measurement  
  spectral methods  
Thermal expansion  
Thermal measurement  
Thermocouples  
Thermometers  
  resistance  
Thermostats

## RADIATION

Bolometers  
Emissivity  
Pyrometers  
Radiation  
  heat  
Radiation detectors  
Radiation pressure

## CHANGE OF STATE

Boiling  
Boiling point  
Condensation  
Critical constants, thermal  
Distillation  
Drying  
Evaporation  
Freezing  
Heat of fusion  
Heat of sublimation  
Heat of transformation

Heat of vaporization  
Humidity  
Melting  
Melting point  
Phase transformations  
Sublimation  
Supercooling  
Thermal transformations  
Vapour pressure  
Vapour pressure measurement  
Vaporization

## THERMODYNAMICS

Entropy  
  properties of substances  
Equations of state  
  gases  
  liquids  
  solids  
Joule—Thomson effect  
Thermodynamic properties  
Thermodynamics  
  applications

## LOW-TEMPERATURE PHYSICS

Cryostats  
Joule—Thomson effect  
Liquefaction, gases  
Low-temperature phenomena  
Low-temperature production  
Low-temperature technique  
Magnetic cooling  
Quantum theory  
  many-particle systems

## Liquid and Solid Helium

Helium  
  liquid  
  liquid, sound propagation  
  solid  
Superfluidity

## Superconductivity

Superconductivity



# ELECTRICITY AND MAGNETISM

Electricity  
Electromagnetism  
Magnetism

## ELECTRICAL MEASUREMENTS AND CIRCUITS

Amplifiers	Filters, electrical
Circuits	Fluctuations
Counting circuits	electrical
Dielectric measurement	High-voltage production
Electrical measurement	Image convertors and amplifiers

## ELECTROSTATICS . DIELECTRICS

Breakdown, electric	Electric strength
gases	Electroluminescence
liquids	Electrostatics
solids	Electrostriction
Contact potential	Ferroelectric materials
Dielectric devices	Ferroelectric phenomena
Dielectric phenomena	High-voltage production
Dielectric properties	Hysteresis
gases [substances]	Piezoelectricity
liquids and solutions	Piezoelectric oscillations
solids	Pyroelectricity
Electrets	Relaxation
Electric charge	Space charge
Electric fields	Triboelectricity
effects	

## CURRENT ELECTRICITY ELECTROKINETICS

Acoustoelectric effects	Hall effect
Conduction, electrical	Magnetoelectric effects
Conductivity, electrical	Magnetoresistance
Contact potential	Photoconductivity
Contact resistance	Photoelectricity
Current, electrical	Photoelectromagnetic effects
Eddy currents	Photovoltaic effects
Electric charge	Rectifiers
Electricity	Resistance, electrical
Electrokinetic effects	Semiconductors
Electron gas	Skin effect
Electrons	Space charge
Electro-optical effects	Superconductivity
Electrophoresis	Thermoelectricity
Filters, electrical	Thermocouples
Fluctuations	Zeta-potential
electrical	

## IONIZATION

Dissociation	Ionization, surface
Ion velocity	Ions
Ionization	recombination
gases	scattering
liquids	Shock waves
solids	effects
Ionization potential	Space charge

## ELECTRIC DISCHARGES

Arcs, electric	Discharges, electric
Breakdown, electric	high-frequency
gases	Gas-discharge tubes
liquids	Lightning
solids	Sparks, electric
Corona, electric discharge	Sputtering

## PLASMA

Discharges, electric	Plasma
Electron gas	Shock waves
Ionization	effects
gases	Space charge
Magnetohydrodynamics	

## Plasma Oscillations

Plasma oscillations

## ELECTRON EMISSION ELECTRON BEAMS

Cathodes	Electron tubes
oxide	Electrons
Electron beams	absorption
effects	ionization
Electron diffraction	radiation
Electron emission	scattering
secondary	Fluctuations, electrical
Electron gas	Image convertors
Electron lenses	Particle optics
electrostatic	Photoelectric emission
magnetic	Photomultipliers
Electron microscopes	Space charge
Electron microscopy	Thermionic emission
Electron optics	electrons
	Work function

## ION EMISSION . ION BEAMS

Biological effect of radiations	Ions
Bremsstrahlung	recombination
Chemical effect of radiations	scattering
ionizing radiations	Ion sources
Gas-discharge tubes	Ion velocity
Ion beams	Particle optics
Ion emission	Particle range
secondary	Particle velocity analysis
Ion microscopes	Physical effects of radiations
Ion optics	Sputtering
	Thermionic emission
	ions

## MASS SPECTROMETERS

Mass spectrometers  
accessories  
applications

## PARTICLE ACCELERATORS

High-voltage production  
Ion sources  
Particle accelerators  
linear  
orbital

## X-RAY TUBES AND TECHNIQUES

Compton effect	X-ray monochromators
Dosimetry	X-ray reflection
High-voltage production	X-ray scattering
Radiation monitoring	X-ray spectra
Radiation protection	absorption
Radiography	emission
X-ray absorption	X-ray spectrometers
X-ray crystallography	X-ray spectroscopy
X-ray diffraction	X-ray tubes
X-ray examination of materials	X-rays
X-ray measurement	effects

## MAGNETISM

Antiferromagnetism	Magnetic resonance and relaxation
Antiferromagnetism	Magnetism
Compasses	Magnetization process
de Haas-van Alphen effect	Magnetization state
Diamagnetism	Magnetoacoustic effects
Ferrimagnetism	Magnetoelectric effects
Ferromagnetism	Magnetomechanical effects
Gyromagnetic effect	Magneto-optical effects
Gyromagnetic ratio	Magnetoresistance
Hall effect	Magnetostriction
Magnetic devices	Magnetothermal effects
Magnetic field measurement	Magnets
Magnetic fields	Paramagnetism
effects	Zeeman effect
Magnetic measurement	

## ELECTROMAGNETISM MAGNETOHYDRODYNAMICS

Eddy currents	Magnetohydrodynamics
Electricity	Plasma
direct conversion	Plasma oscillations
Electrodynamics	Quantum electrodynamics
Electromagnetism	Shock waves
Electromotive force	effects
Inductance	

## NUCLEAR PHYSICS

Biological effects of radiations  
Chemical effects of radiations  
ionizing radiations  
Nuclear physics  
Physical effects of radiations  
Physics fundamentals

## APPARATUS

### PARTICLE DETECTORS

Alpha-ray spectrometers	Mass spectrometers
Beta-ray spectrometers	accessories
Counters	applications
Cherenkov	Neutron spectrometers
crystal	Particle accelerators
Geiger	linear
proportional	orbital
scintillation	Particle detectors
spark	Particle optics
operation technique	Particle spectrometers
Counters, accessories	Radioactivity measurement
Counting circuits	apparatus
Dosimetry	Statistical analysis
Gamma-ray spectrometers	applications, counters
Ionization chambers	Velocity analysis, particles

## ELECTROMAGNETIC WAVES AND OSCILLATIONS

Absorption	Interferometry
electromagnetic waves	electromagnetic waves
Amplifiers	Light
Atoms	electromagnetic theory
excitation	Magnetohydrodynamics
Diffraction	Masers
electromagnetic waves	optical
Doppler effect	Molecules
Electromagnetic oscillations	excitation
Electromagnetic wave	Optical pumping
atmosphere [propagation	Plasma oscillations
ionosphere	Radiation
guided waves	Reflection
Electromagnetic waves	electromagnetic waves
radiators	Refraction
Interferometers	electromagnetic waves
electromagnetic waves	Scattering
	electromagnetic waves

## Radiofrequency Spectroscopy Techniques

Antiferromagnetic resonance	Nuclear magnetic resonance and
Antiferromagnetic resonance	[relaxation]
Cyclotron resonance	Nuclear quadrupole resonance
Ferrimagnetic resonance	Paramagnetic resonance and
Ferromagnetic relaxation	Spectra [relaxation]
Ferromagnetic resonance	Spectrometers, radiofrequency

## Track Visualization

Bubble chambers	Particle tracks
Cloud chambers	Particle track visualization
Nuclear track emulsions	Range of particles

## NUCLEAR FIELD THEORY

Baryons	Nuclear forces
Collision processes	Parity
Dispersion relations	Quantum electrodynamics
Field theory, quantum	Quantum theory
interactions	application methods
interactions, strong	quantization
interactions, weak	wave equations
meson field	many particle systems
quantization	Scattering
Fundamental particles	Scattering, particles
Leptons	S-matrix theory



# ELEMENTARY PARTICLES

Baryons  
Collision processes  
Field theory, quantum meson field  
Fundamental particles  
Leptons

Parity  
Particle tracks  
Particle track visualization  
Range of particles  
Scattering, particles  
Velocity analysis, particles

## Photons

Bremsstrahlung  
Cherenkov radiation  
Compton effect  
Gamma-ray spectra  
Gamma-ray spectrometers

Gamma-rays  
absorption  
angular distribution  
detection, measurement  
effects  
internal conversion  
scattering

Photons  
scattering  
interactions  
polarization

## X-rays

X-ray absorption  
X-ray diffraction  
X-ray measurement

X-ray reflection  
X-ray scattering  
X-rays  
effects

## Neutrinos

Neutrinos and antineutrinos

## Electrons

Beta-ray spectra  
Beta-ray spectrometers  
Beta-rays  
absorption  
angular distribution  
detection, measurement  
effects  
scattering  
Electron annihilation

Electron pairs  
Electron theory  
Electrons  
absorption  
ionization  
radiation  
scattering  
Positronium  
Positrons

## Nucleons

Nucleons and antinucleons  
scattering  
scattering, nucleon—nucleon  
interactions  
antinucleons

## Protons

Proton spectra  
Protons and antiprotons  
absorption  
angular distribution  
detection, measurement  
effects  
interactions  
magnetic moment  
polarization  
production  
scattering  
scattering, proton—deuteron  
scattering, proton—proton  
antiprotons

## Neutrons

Neutron diffraction  
Neutron spectra  
Neutron spectrometers  
Neutrons and antineutrons  
absorption  
angular distribution  
detection, measurement  
diffusion  
effects  
interactions  
moderation  
polarization  
production  
reflection  
refraction  
scattering  
scattering, proton—neutron

## Mesons

Atoms, mesic  
Mesons  
absorption  
capture  
decay  
decay observations  
detection, measurement  
effects  
interactions  
magnetic moment  
mass  
production  
scattering  
spin and parity  
Muonium

## Hyperons

Hypernuclei  
Hyperons  
absorption  
capture  
decay  
decay observations  
detection, measurement  
effects  
interactions  
magnetic moment  
mass  
production  
scattering  
spin and parity  
Strange particles

## Deuterons

Deuterons  
effects  
interactions  
photodisintegration  
polarization  
scattering

## Tritons

Tritons

## Alpha-particles, He Nuclei

Alpha-particles  
Alpha-ray spectra  
Alpha-ray spectrometers

Alpha-rays  
absorption  
angular distribution  
detection, measurement  
effects  
scattering

## COSMIC RAYS

Cosmic rays  
absorption  
apparatus  
composition  
alpha-particles  
deuterons  
electrons  
mesons

Cosmic rays  
neutrons  
photons  
protons  
effects and interactions  
origin  
primary  
showers and bursts  
variations

Nuclear reactions due to  
alpha-rays  
cosmic rays  
deuterons  
electrons  
helium-3  
mesons  
neutrons  
nuclei of  $Z > 2$   
photons  
protons  
tritons  
Nuclear spallation

Nucleons and antinucleons  
scattering  
Nucleus  
models  
theory  
Photons  
scattering  
Physical effects of radiation  
Protons and antiprotons  
scattering  
Radiation monitoring  
Radiation protection  
Scattering, particles

## NUCLEUS

Beta-decay theory  
Gyromagnetic ratio  
Hypernuclei  
Nuclear decay theory  
Nuclear forces  
Nuclear magnetic resonance  
and relaxation  
Nuclear orientation  
Nuclear physics

Nucleus  
electric moment  
energy levels  
magnetic moment  
models  
size  
spin and parity  
theory

## Nuclear Fission

Nuclear fission  
products

## Thermonuclear Reactions . Nuclear Fusion

Nuclear fusion  
Thermonuclear reactions  
Plasma

## Energy Levels

Gamma-ray spectra  
Nuclear excitation  
Nuclear isomerism  
Nucleus  
energy levels  
models

## NUCLEAR DECAY RADIOACTIVITY

Alpha-particles  
Alpha-ray spectra  
Alpha-ray spectrometers  
Alpha-rays  
absorption  
angular distribution  
detection, measurement  
effects  
scattering  
Beta-decay theory  
Beta-ray spectra  
Beta-ray spectrometers  
Beta-rays  
absorption  
angular distribution  
detection, measurement  
effects  
scattering  
Biological effects of radiations  
Chemical effect of radiations  
ionizing radiations  
Dosimetry  
Fallout

Gamma-ray spectra  
Gamma-ray spectrometers  
Gamma-rays  
absorption  
angular distribution  
detection, measurement  
effects  
internal conversion  
scattering  
Nuclear decay theory  
Physical effects of radiations  
Radiation monitoring  
Radiation protection  
Radioactive dating  
Radioactive tracers  
Radioactivity  
artificial production  
decay periods  
decay schemes  
electron capture  
Radioactivity measurement  
apparatus  
Radiochemistry

Biological effects of radiations  
Chemical analysis  
by nuclear reactions  
Chemical effects of radiations  
ionizing radiations  
Dosimetry  
Nuclear fission  
products  
Nuclear fusion  
Nuclear reactions  
chemical effects

Nuclear reactors  
fission  
fusion  
Physical effects of radiations  
Plasma  
Radiation monitoring  
Radiation protection  
Radiochemistry  
Thermonuclear reactions

## NUCLEAR POWER STUDIES

## NUCLEAR REACTIONS

Alpha-rays  
scattering  
Biological effects of radiations  
Chemical analysis  
by nuclear reactions  
Chemical effects of radiations  
ionizing radiations  
Collision processes  
Deuterons  
scattering  
Electrons  
scattering

Gamma-rays  
scattering  
Hyperons  
scattering  
Mesons  
scattering  
Neutrons and antineutrons  
scattering  
Nuclear excitation  
Nuclear forces  
Nuclear reactions  
chemical effects



# ATOMIC AND MOLECULAR PHYSICS

Atoms  
Collision processes  
Constants  
Molecules  
Orbital calculation methods

## ATOMS

Atoms  
electron scattering  
excitation  
magnetic moment  
structure  
Atomic beams  
Atomic mass  
Atomic weight  
Collision processes  
Constants  
Elements  
origin  
relative abundances

Gyromagnetic ratio  
Ionization potential  
Luminescence  
gases  
Optical pumping  
Orbital calculation methods  
Periodic system  
Photoelectric emission  
Spectra  
atoms  
Spectral line breadth  
Stark effect  
Zeeman effect

## Isotopes

Isotope effects  
Isotope exchanges  
Isotope separation  
Isotopes  
detection  
relative abundances

Mass spectra  
Mass spectrometers  
accessories  
applications  
Tracers

## Mesic Atoms

Atoms, mesic

## MOLECULES

Avogadro's number  
Molecules

## Structure . Internal Mechanics Spectra

Bonds  
Chemical structure  
Luminescence  
gases  
Molecular weight  
Molecules  
configuration and dimensions  
inorganic  
organic  
excitation  
internal mechanics  
electronic structure  
nuclear coupling  
vibration and rotation  
moments  
Orbital calculation methods  
Raman spectra  
inorganic  
organic

Spectra  
continuous  
flames  
inorganic liquids and solutions  
inorganic molecules  
diatomic  
diatomic, radiofrequency  
polyatomic  
polyatomic, radiofrequency  
inorganic solids  
radiofrequency  
organic molecules and substances  
infrared  
radiofrequency  
resonance  
Spectral line breadth  
Stark effect  
Valency  
Zeeman effect

## Magnetic Resonances

Magnetic resonance and  
Molecules [relaxation  
nuclear coupling  
relaxation

Nuclear magnetic resonance and  
[relaxation  
Nuclear quadrupole resonance  
Paramagnetic resonance and  
[relaxation

## Dissociation . Free Radicals

Free radicals  
Heat of dissociation

Molecules  
dissociation  
dissociation energies

## Intermolecular Mechanics

Collision processes  
Molecular beams

Molecules  
intermolecular mechanics

## Macromolecules . Polymers

Association  
Heat of formation  
Isomerism

Macromolecules  
Polymers  
Proteins

## Mesic Molecules

Molecules, mesic

# SOLID-STATE PHYSICS

Bonds  
Crystal properties  
Crystals  
Internal field  
Equations of state  
solids  
Metals  
theory

Nuclear orientation  
Orbital calculation methods  
Solids  
structure  
theory  
Surface energy  
Surface phenomena

## LATTICE MECHANICS

Absorption	Reflection
acoustic waves	acoustic waves
acoustic waves, ultrasonic	acoustic waves, ultrasonic
Acoustic waves propagation	Refraction
ultrasonic	acoustic waves
Acoustoelectric effects	acoustic waves, ultrasonic
Crystals	Scattering
lattice mechanics	acoustic waves
Diffraction	acoustic waves, ultrasonic
acoustic waves	Transmission
acoustic waves, ultrasonic	acoustic waves
Dispersion, acoustic	acoustic waves, ultrasonic
ultrasonic	Velocity
Magnetoacoustic effects	acoustic waves
	acoustic waves, ultrasonic

## Thermal Properties

Conductivity, thermal	Melting point
solids	Specific heat
Equations of state	Thermal expansion
solids	Thermodynamic properties
Melting	

## ELECTRON STATES

Crystal properties	Electrons
Crystals	absorption
electron states	radiation
excitons	scattering
internal fields	Hall effect
Cyclotron resonance	Magnetoacoustic effects
Electron beams	Metals
effects	theory
Electron gas	Piezoresistance
Electron pairs	Solids
annihilation	theory
	Surface phenomena

## DEFECT PROPERTIES

Cold working	Heat treatment
Creep	Internal friction
Crystals	Neutron diffraction examination
etching	[of materials]
imperfections	Plastic deformation
twinning	Plastic flow
Crystal structure	Slip
Elastic deformation	Stresses, internal
Electron diffraction examination	Work hardening
[of materials]	X-ray examination of materials
Electron microscope examination	microstructure
[of materials]	

## Diffusion

Diffusion, solids  
Permeability, mechanical

## Colour Centres

Absorption  
light  
Colour centres  
X-rays  
effects

## Radiation Effects

Acoustic waves	Ion beams
effects	effects
Alpha-rays	Mesons
effects	effects
Beta-rays	Neutrons
effects	effects
Deuterons	Physical effects of radiations
effects	Protons
Electron beams	effects
effects	X-rays
Gamma-rays	effects
effects	
Hyperons	
effects	

## ELECTRICAL PROPERTIES OF SOLIDS

Acoustoelectric effects	Fluctuations
Conduction, electrical	electrical
Conductivity, electrical	Hall effect
Contact potential	Magnetoelectric effects
Contact resistance	Magnetoresistance
Crystals	Magnetothermal effects
electron state	Metals
Current, electrical	theory
Eddy currents	Resistance, electrical
Electron gas	Skin effect
Electro-optical effects	Space charge

## Semiconductors

Hall effect	Magnetoresistance
Magnetoelectric effects	Semiconductors

## Semiconducting Materials

Semiconducting materials  
germanium  
indium antimonide  
silicon

## Semiconductor Devices

Counters  
Semiconducting devices  
diodes and junctions  
transistors

## Photoconductivity

Photoconductivity	Photoelectromagnetic effects
Photoelectricity	Photovoltaic effects

## Thermoelectric Properties

Thermocouples  
Thermoelectricity



## Dielectric Properties

Breakdown, electric solids  
Contact potential  
Dielectric devices  
Dielectric measurement  
Dielectric phenomena  
Dielectric properties of solids [substances]  
Electrets  
Electric charge  
Electric fields  
Electric strength

Electrostriction  
Ferroelectric materials  
Ferroelectric phenomena  
Hysteresis  
Piezoelectricity  
Piezoelectric oscillations  
Pyroelectricity  
Relaxation  
Rochelle salt  
Space charge  
Triboelectricity

## OPTICAL PROPERTIES OF SOLIDS

Absorption  
light  
Diffraction  
light  
Diffusion  
light  
Dispersion, optical  
Double refraction  
mechanical  
Electro-optical effects  
Interference  
light  
Magneto-optical effects  
Masers  
optical  
Optical constants  
Optical films  
Optical materials  
Optical pumping  
Optical rotation  
Optics  
Photoelasticity  
Pleochroism  
Polarized light  
Raman spectra  
inorganic  
organic

Reflection  
light  
Reflectivity  
Refraction  
light  
Refractive index  
light  
Scattering  
light  
Spectra  
continuous  
inorganic solids  
radiofrequency  
organic molecules and  
infrared [substances]  
radiofrequency  
Spectral line breadth  
Stark effect  
Transmission  
light  
Transparency  
Velocity  
light  
X-ray spectra  
absorption  
emission  
Zeeman effect

## Luminescence

Colour centres  
Electroluminescence  
Luminescence  
inorganic  
organic

Luminescent devices  
Thermoluminescence

## MAGNETIC PROPERTIES OF SOLIDS

Antiferromagnetism  
Antiferromagnetism  
de Haas-van Alphen effect  
Diamagnetism  
Electron diffraction examination  
[of materials]  
Electron microscope examination  
[of materials]  
Ferrimagnetism  
Ferrites  
Ferromagnetism  
Gyromagnetic ratio  
Hall effect  
Magnetic devices  
Magnetic fields  
effects

Magnetic properties of substances  
antiferromagnetic  
antiferromagnetic  
diamagnetic  
ferrimagnetic  
ferromagnetic  
paramagnetic  
transitions  
Magnetism  
Magnetization process  
Magnetization state  
Magnetoacoustic effects  
Magnetoelectric effects  
Magneto-optical effects  
Magnetoresistance  
Magnetostriiction  
Magnetothermal effects  
Neutron diffraction examination  
[of materials]  
Paramagnetism  
Zeeman effect

## Magnetic Resonances

Antiferromagnetic resonance  
Antiferromagnetic resonance  
Cyclotron resonance  
Ferrimagnetic resonance  
Ferromagnetic relaxation  
Ferromagnetic resonance  
Gyromagnetic effect  
Magnetic resonance and  
[relaxation]

Magnetomechanical effects  
Masers  
Nuclear magnetic resonance  
[and relaxation]  
Nuclear quadrupole resonance  
Optical pumping  
Paramagnetic resonance and  
[relaxation]

## MECHANICAL PROPERTIES OF SOLIDS

Abrasion  
Adhesion  
Bending  
Breaking strength  
Brittleness  
Cold working  
Compressibility  
Corrosion  
Cracks  
Creep  
Density  
solids  
Elastic constants  
measurement  
Elastic deformation  
Elastic fatigue  
Elastic limit  
Elastic relaxation  
Elasticity  
Fracture  
Friction  
Hardness  
Heat treatment  
High-pressure phenomena  
Hysteresis and effects

Impact  
Internal friction  
Lubrication  
Magnetomechanical effects  
Mechanical strength  
compressive  
shear  
tensile  
Photoelasticity  
Physical effects of radiations  
Plastic deformation  
Plastic flow  
Plasticity  
Rheology  
Slip  
Strain gauges  
Stress analysis  
Stress effects  
Stress/strain relations  
Stresses, internal  
Thixotropy  
Torsion  
Viscoelasticity  
Wear  
Work hardening

## STRUCTURE OF SOLIDS

Crystal structure  
Density  
solids

Phase transformations  
Solids  
structure

## CRYSTALLOGRAPHY

Crystal chemistry  
Crystal properties  
Crystal structure  
Crystallization  
Crystallography  
mathematical  
Heat of crystallization  
Minerals  
Polymorphism  
Solids  
structure  
Surface texture

Crystals  
electron states  
etching  
excitons  
faces  
growth  
imperfections  
internal fields  
lattice mechanics  
orientation  
twinning  
whiskers

## CRYSTAL LATTICE STRUCTURES

Crystal structure, atomic  
elements  
inorganic compounds  
organic compounds  
Electron diffraction  
[crystallography]  
Electron diffraction examination  
Electron microscope examination  
Neutron diffraction  
[crystallography]  
Neutron diffraction examination  
X-ray absorption

X-ray crystallography  
apparatus  
calculation apparatus  
calculation methods  
technique  
X-ray diffraction  
X-ray examination of materials  
microstructure  
molecular structure  
X-ray measurement  
X-ray monochromators  
X-ray reflection  
X-ray scattering  
X-ray tubes



## ALLOYS . METALLURGY

Alloys	Phase equilibrium
Cold working	Phase transformations
Crystallization	Precipitation
Crystal structure	Sintering
Crystal structure, atomic	Solid solutions
alloys	Solubility
Heat of crystallization	Steel
Heat treatment	Thermal transformations
Metallurgy	Work hardening
Metals	Zone melting and refining
theory	

## OTHER SOLID FORMS

Amorphous state	Plastics
Fibres	Polymers
Filters	Porosity
Glass	Powders
Granular structure	Rubber
Membranes	Sintering
Particle size	Vitreous state
Permeability, mechanical	Waxes

## Surfaces . Films . Adsorption

Adsorbed layers	Sputtering
Adsorption	Sublimation
Evaporation	Surface energy
Films	Surface measurement
solid	Surface phenomena
Heat of adsorption	Surface texture
Sorption	

## MICROSTRUCTURE EXAMINATION

Amorphous state	Particle size
Electron diffraction examination	Powders
Electron microscope examination	Porous materials
Electron microscopy	Radiography
Fibres	Surface texture
Granular structure	Vitreous state
Ion microscopes	X-ray examination of materials
Microscopy	microstructure
Neutron diffraction examination	molecular structure

## PHYSICAL CHEMISTRY

Atomic weight  
Avogadro's number  
Balances  
Bonds  
Centrifuges  
Chemical structure  
Chemical technology  
Distillation  
Elements  
origin  
relative abundances  
Filters

Isomerism  
Laboratory apparatus and technique  
Macromolecules  
Molecular weight  
Molecular weight determination  
Periodic system  
Physical chemistry  
Precipitation  
Pumps  
Quantum chemistry  
Sedimentation  
Valency

## THERMOCHEMISTRY . REACTIONS

Association	Heat of combustion
gases	Heat of dissociation
liquids	Heat of formation
Catalysis	Heat of reaction
Chemical reactions	Isotope exchanges
Combustion	Oxidation
Corrosion	Phase equilibrium
Crystal chemistry	Phase transformations
Detonation	Polymerization
Dissociation	Polymers
Exchanges, chemical	Reaction kinetics
Explosions	Sorption
Flames	Thermal transformations
Heat of adsorption	

## ELECTROCHEMISTRY

Conductivity, electrical	Electrolysis
electrolytic	Electrolytic deposition
measurement	Electrophoresis
Dissociation	Ion velocity
electrolytic	electrolytic
Electrochemistry	Ions, electrolytic
electrodes	Zeta-potential
Electrokinetic effects	

## PHOTOCHEMISTRY

## RADIATION CHEMISTRY

Chemical effects of radiations  
acoustic waves  
ionizing radiations  
Nuclear reactions  
chemical effects  
Photochemistry  
Radiochemistry

## DISPERSIONS . COLLOIDS

Aerosols	Osmosis
Centrifuges	Particle size
Colloids	Precipitation
Electrophoresis	Sedimentation
Emulsions	Sols
Filters	Solubility
Foams	Solutions
Gels	Surface phenomena
Heat of solution	Suspensions
Membranes	Thixotropy

## PHYSICAL METHODS OF CHEMICAL ANALYSIS

Chemical analysis  
adsorption  
by mass spectrometry  
by nuclear reactions  
electrochemical  
radioactive  
X-ray  
Chromatography  
Radioactive tracers  
Spectrochemical analysis  
Tracers



# GEOPHYSICS

Earth  
age  
composition  
heat  
rotation  
Geodesy

Geophysical prospecting  
Geophysics  
Glaciers  
Gravity  
Mineralogy

Minerals  
Oceanography  
Radioactive dating  
Radioactivity  
Seawater

Seismic waves  
Seismographs  
Seismology  
Terrestrial electricity  
Tides

## ATMOSPHERE

Altimeters  
Anemometers  
Atmosphere  
composition  
humidity  
movements  
precipitation  
radioactivity  
structure  
temperature  
thermodynamics  
Atmospheric acoustics  
Atmospheric disturbances  
Atmospheric electricity  
Atmospheric optics  
Atmospheric pressure  
Atmospheric spectra  
Atmospherics  
Climatology  
Clouds  
Condensation

Evaporation  
Fallout  
Fog  
Humidity  
Hygrometers  
Ice  
Lightning  
Meteorological instruments  
Meteorology  
Rain  
Rockets  
Satellites, artificial  
Sky brightness  
Snow  
Sunlight  
Thunderstorms  
Twilight  
Visibility  
Weather  
Wind

## UPPER ATMOSPHERE

### IONOSPHERE

Airglow  
Altimeters  
Atmosphere  
composition  
movements  
radioactivity  
radiation belts  
structure  
temperature  
thermodynamics  
upper  
Atmospheric electricity  
Atmospheric optics  
Atmospheric pressure  
Atmospheric spectra  
Atmospherics

Aurora  
Fallout  
Ionosphere  
D-region  
E-region  
F-region  
Ionosphere measuring apparatus  
Ionization, atmosphere  
Meteors  
Rockets  
Satellites, artificial  
Sky brightness  
Sunlight  
Twilight  
Visibility  
Zodiacal light

### GEOMAGNETISM

Compasses  
Earth  
magnetic field  
magnetic field, variations

Magnetic storms  
Magnetism  
Rock magnetism

## ASTROPHYSICS

Astronomical instruments  
Astronomical observations  
Astronomical spectra  
comets  
moon  
nebulae  
planets  
stars  
sun  
sun, corona and prominences  
Astronomy and astrophysics  
Celestial mechanics

Comets  
Corona, solar  
Cosmic rays  
Cosmology  
Earth  
rotation  
Eclipses  
Elements  
origin  
relative abundances  
Galaxies  
Gravitation

Interplanetary matter  
Interstellar matter  
Magnetohydrodynamics  
Meteors  
Moon  
Nebulae  
Novae  
Planets  
Prominences, solar  
Solar system

Stars  
composition  
magnetism  
radiation  
structure  
Sun  
magnetism  
radiation  
Sunspots  
Telescopes  
astronomical  
Thermonuclear reactions  
Zodiacal light

## Radioastronomy

Cosmic radiations, r.f.  
Radioastronomy  
Sun  
radiation, r.f.

## Space Research

Rockets  
Satellites, artificial  
Space research  
Space vehicles  
instrumentation

## BIOPHYSICS . PHYSIOLOGICAL PHYSICS

Biological effects of radiations  
acoustic waves  
ionizing radiations  
Biological technique and instruments  
Biology  
Biophysics  
Blood  
Bone

Dosimetry  
Hygiene  
Medical science  
Physiology  
Proteins  
Radiation protection  
Radiography  
Zoology

## Hearing . Speech

Ear  
Hearing  
Hearing aids  
Noise  
Speech

## Vision

Eye  
Colour vision  
Stereoscopy  
Vision

# TECHNIQUE . MATERIALS

Biological technique and instruments  
Chemical technology  
Laboratory apparatus and technique  
Leak detection  
Low-temperature technique  
Metallurgy  
Vacuum technique  
Zone melting and refining

All the chemical elements are listed by name, followed by their compounds and alloys. Organic compounds are grouped under the headings "Organic compounds", "Polymers", "Plastics". In addition, there are also the following general headings:

Actinide compounds  
Actinides  
Alkali metal compounds  
Alkali metals  
Alkaline earth compounds  
Alkaline earth metals  
Alloys  
Ceramics  
Ferrites  
Ferroelectric materials  
Fibres  
Garnets  
Halogens  
Inert gases

Metals  
Minerals  
Optical materials  
Porous materials  
Powders  
Proteins  
Rare earth compounds  
Rare earth metals  
Semiconducting materials  
Semiconductors  
Transition metal compounds  
Transition metals  
Waxes

as well as the following special substance headings:

Air  
Bitumen  
Blood  
Bone  
Clay  
Coal  
Concrete  
Deuterium  
Diamonds  
Gelatin  
Glass  
Graphite  
Ice  
Leather

Mica  
Ozone  
Paper  
Quartz  
Rochelle salt  
Rubber  
Sand  
Seawater  
Soil  
Steam  
Steel  
Tritium  
Water  
Wood